

AUG 01 1995

HRP-8J

CERTIFIED MAIL: P 847 326 188
RETURN RECEIPT REQUESTED

Fred G. Nicar, General Manager
Chemical Waste Management, Inc.
Vickery Facility
3956 State Route 412
Vickery, Ohio 43464

RE: **Conditional Approval**
Chemical Waste Management, Inc. Vickery
Facility (CWM-Vickery)
Report on Current Conditions (ROCC)
OHD 020 273 819

Dear Mr. Nicar:

The United States Environmental Protection Agency (U.S. EPA) has reviewed CWM-Vickery's revised ROCC, prepared by RUST Environment & Infrastructure, for the Chemical Waste Management facility in Vickery, Ohio, dated June 1995. Based on this review, the U.S. EPA **conditionally** approves CWM-Vickery's ROCC. CWM-Vickery must address the two deficiencies identified in U.S. EPA's review, as a condition of the approval.

Enclosed are the U.S. EPA's deficiency comments on the revised ROCC. CWM-Vickery shall modify its ROCC to respond to the deficiencies and submit the revised ROCC within 30 days after receipt of this letter. The modified ROCC shall be submitted as a Final ROCC. CWM-Vickery shall remove all editorial markings, such as overstrikes, capitalizations, etc. Included with the final document, CWM-Vickery shall complete a page report that identifies all the changes made to the Final ROCC to comply with the conditions for approval.

In addition to three copies of the Final ROCC required by the U.S. EPA, please send one copy of each to:

Edwin Lim
Ohio EPA, DHWM
P.O. Box 1049
1800 WaterMark Drive
Columbus, OH 43266-0149

Chuck Hull
Ohio EPA, NWDO
347 N. Dunbridge Rd.
Bowling Green, OH 43402

CWM-Vickery
Information
Repository

If you have questions please contact me at (312) 886-7569.

Sincerely,

Thomas Matheson, Corrective Action Project Manager
RCRA Permitting Branch

cc: Ed Lim, OEPA/CO
Chuck Hull, OEPA/NEDO

HRP-8J:MATHESON:twm:8/01/95:6-7596: F:\USER\TMATHESO\CWMVICK\CC_COM3.LTR

CONCURRENCE REQUESTED FROM RPB			
OTHER STAFF	RPB STAFF	OHIO SECTION CHIEF	RPB BRANCH CHIEF
	<i>twm</i> 8/1/95		

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5
DEFICIENCY COMMENTS ON THE
CHEMICAL WASTE MANAGEMENT - VICKERY, INC.
REPORT ON CURRENT CONDITIONS
DATED JUNE 1995

The United States Environmental Protection Agency (U.S. EPA), reviewed the June 1995 Report on Current Conditions for the Chemical Waste Management (CWM-Vickery) Facility in Vickery, Ohio for overall technical adequacy and to determine if comments from the U.S. EPA on the previous version of the document dated April 1995 were adequately addressed. The majority of the CWM-Vickery responses adequately address its respective U.S. EPA comment; however, the following specific comments identify responses that do not adequately address the comments.

The comments provided below refer to specific sections of the Report on Current Conditions. The comments presented below are indicated by section number, page number, and paragraph number. When paragraphs are cited, the first complete paragraph on a page is designated "Paragraph 1." If comments are made on a paragraph that carries over from a previous page, the incomplete paragraph is designated "Paragraph 0."

1. **Section 3.2, Page 3-2, Paragraph 1.** Previous specific comment 1 requested that the precipitation/evapotranspiration ratio be provided. The text was revised to provide a ratio of 56.89; however, this ratio seems to be unrealistically high because it indicates that the precipitation rate is almost 57 times higher than the evapotranspiration rate. Using the mean annual amount of precipitation listed on page 3-1 (33 inches) to calculate evapotranspiration would equal 0.58 inches. However, this value is unlikely. The ratio should be revised or the text should be revised to support a ratio of 56.89.
2. **Section 4.4.2, Page 4-14.** Previous specific comment 2 requested an explanation for the changes in the potentiometric surface and gradient in the bedrock aquifer beneath the facility. The text was revised to state that the changes may be due to boundary conditions or permeability contrasts in the bedrock aquifer. However, the text states that these boundary condition locations have not been determined exactly because they are not a significant factor in determining groundwater flow directions beneath the facility. Therefore, the conditions controlling groundwater flow need to be determined, especially if a groundwater control or extraction system is installed.

In addition, the original comment also requested information concerning possible artesian conditions in the bedrock aquifer beneath the facility. The facility responded to this comment by stating in its response to the Notice of Deficiencies letter that artesian conditions are present in the bedrock aquifer beneath the facility; however, page 3-9 of the revised text states that no artesian conditions exist in any of the wells at the facility. This discrepancy needs to be resolved.

END OF DEFICIENCY COMMENTS



State of Ohio Environmental Protection Agency

Northwest District Office

47 North Dunbridge Road
Bowling Green, Ohio 43402
(419) 352-8461 FAX (419) 352-8468George V. Voinovich
Governor

INTER-OFFICE COMMUNICATION

TO: Beth Ames, Group Leader, DHWM, NWDO

FROM: *DEM* Dale Mc Lane, Geologist, through ~~Tim Fishbaugh~~, Unit Supervisor DDAGW, NWDO

DATE: August 10, 1995

SUBJECT: Review of "Report of Current Conditions-RCRA Facility Investigation". Revised June, 1995. Chemical Waste Management, Inc. Vickery Deepwell Injection Site, Sandusky County, Ohio. ID# OHD020273819

INTRODUCTION

Chemical Waste Management, Inc. (CWM) owns and operates a permitted hazardous waste deep well injection site located near the town of Vickery, Ohio. The facility accepts a variety of liquid hazardous wastes, primarily non-ignitable, non-water reactive waste acids and pickle liquors. The "Report of Current Conditions" (ROCC) is being prepared by Rust Environment and Infrastructure as a result of the recent issuance of an updated RCRA Part B Permit for the site. As a condition to the issuance of the sites Part B Permit, a RCRA Facility Investigation (RFI) must be completed.

PROJECT BACKGROUND

A precursor to the RFI work plan, a RCRA Facility Assessment (RFA) was prepared in March, 1991 for CWM by Jacobs Engineering, a subcontractor to Metcalf and Eddy. Information from the earlier RFA report was used in the ROCC for comparison to current conditions. USEPA Region IV has reviewed the ROCC and a letter was sent on March 3, 1995 from Mr. Thomas Matheson regarding deficiencies in the ROCC. CWM responded to the USEPA comments of March 3, 1995 in an April 6, 1995 re-submittal of a completely revised ROCC. The USEPA again commented on deficiencies in the ROCC in a May 31, 1995 letter. CWM responded to the May 31, 1995 USEPA comments by submitting amended pages to the ROCC on July 3, 1995.

The following pages contain the DDAGW comments regarding the ROCC as revised on July 3, 1995.

If you have any questions, please call me at extension 3099.

pc: Chuck Hull, Unit Supervisor, DHWM, NWDO
Jeff Patzke, Supervisor, DDAGW, CO
File

ID # 071295022041



Beth Ames, DHWM
CWM-Vickery, ROCC
08-10-95
Page A1

OHIO EPA DDAGW, NWDO GENERAL COMMENTS

- 1) Section 5.2 describes the 52 solid waste management units (SWMU) identified in the ROCC. For each SWMU, a description of the type of "clean" standards used to determine any further remedial action has not been provided. For example were all soils removed to a depth where analysis indicated no hazardous constituents were present above method detection limits, or was a determination made using site background concentrations? While the main focus of interim corrective measures has been on PCBs, volatile and semi-volatile organic compounds, less attention has been given to other hazardous constituents, i.e. metals. For example, what criteria were used to evaluate TCLP listed metals remaining in the soils at the site?

The SWMU data should include a brief description of the criteria used to determine the effectiveness of the interim corrective measures taken at each SWMU, in the sampling data section.

- 2) CWM provided to the USEPA a chronology of all known releases to the environment on November 7, 1985, under section 3004(u) of RCRA. Because some of the SWMUs were operational after 1985, there is a considerable lack of information on post 1985-releases. Section B.9 of Volume 1 of the October 24, 1994 Part B permit application concerns past releases. However, this section of the Part B Permit does not provide any information after 1985. It is not readily apparent to this office that a summary of releases from the SWMU at the facility has been prepared since 1985. Section 6.10 of the ROCC "Additional Interim Remedial Activities" is lacking in detail in its description of on-site spills.

Because the 1985 to present date significant release information has not been included with the Part B Permit Application, this information must be included as an appendix to the ROCC. The release summary should follow the same format as the November 7, 1985 USEPA submittal.

- 3) Some of the figures and drawings have not reproduced well. These figures are apparently blue line reproductions of CADD produced drawings.

CWM should take care to provide drawings which are clear and legible, and the final version of the ROCC needs to include better quality reproductions.

OHIO EPA DDAGW, NWDO SPECIFIC COMMENTS

- 1) Figure 4-1, Site Topography has no contour interval provided. Spot elevations and elevations on contours are entirely illegible.

CWM must modify this drawing to provide the necessary elevation details in a form which is readily understood by the agency and the public.

- 2) Section 5.0 pages 173-174 describes AOC "I" - Remaining Underground Piping. The description of the underground piping which formerly or currently exists at the site is lacking in sufficient detail. As an example, on page 5-104 in regard to SWMU 32 - Pump House 3, two documented release incidents from the transfer pipeline leading to Injection Well 2 is described. Other non-documented releases from the underground transfer pipelines formerly located on-site cannot be ruled out.

Beth Ames, DHWM
CWM-Vickery, ROCC
08-10-95
Page A2

CWM must provide a clear drawing or set of drawings which shows the location of any past or present underground pipe lines at the site.

- 3) Section 5.0 pages 167-168 describes AOC "F" - Former Truck Sampling Area. This AOC includes the truck scale, receiving trailer, and an underground storage tank which is used to collect rain and snowmelt from under the former truck sampling area. The location of this AOC is given on Figure 2-4. However, prior to 1985, trucks were sampled at the present maintenance receiving gate, and weighed on a scale adjacent to the guardhouse. A review of historical aerial photographs of the CWM site by DDAGW indicated that prior to 1985, access to the site was controlled by the main gate to the east of the office/laboratory building. This area is identified as having a truck scale on Plan Drawing B-3 "Vickery Ohio Facility", Existing Facility Plan, Part B Permit, which was received by Ohio EPA-NWDO on October 24, 1994.

The old truck scale and sampling area has not been identified as an AOC in any of the previous reports. This area apparently does not have any secondary containment according to the on-site inspector, Mr. Mitchell Matthews. Prior to 1985, there were reports of leaking waste loads coming into the site from residents living in the area. There is a high degree of probability that there is soil contamination in the area of the old truck scale and sampling area. Therefore, CWM must describe the old truck scale as an additional AOC in Section 5.0 of the ROCC.

- 4) Section 6.9 describes the closure of Injection Wells 1, 1A, and 3. No discussion of the removal of any contaminated soils around the well heads was provided. No discussion of the removal of any underground transfer pipelines in the vicinity of the abandoned well heads was provided.

CWM needs to provide more detail in section 6.9 regarding the removal of contaminated soils and piping in the vicinity of Injection Wells 1, 1A, and 3.



July 28, 1995

Mr. Tom Matheson
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Review of the June 1995 Description of Current Conditions
for the Chemical Waste Management (CWM) Facility, Vickery, Ohio
Contract No. 68-W4-0007, Work Assignment No. R05021**

Dear Mr. Matheson:

PRC Environmental Management, Inc. (PRC), reviewed the above-referenced document for overall technical adequacy and to determine if U.S. Environmental Protection Agency (EPA) comments on the April 1995 version of the document were addressed. In general, the majority of the CWM responses adequately addressed their respective EPA comment; however, specific comments included in Enclosure 1 identify responses that do not adequately address the comments.

PRC has enclosed one paper copy and one disk copy of its technical review comments on responses to comments on the revised document.

If you have any questions or comments, please call me at (312) 946-6465.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jennifer Force", is written over a horizontal line.

Jennifer Force
Project Manager

Enclosures (2)

cc: Bernie Orenstein, EPA Region 5 (letter only)
Ed Schuessler, PRC (letter only)
Kevin Schnoes, PRC
Cathy Collins, PRC

ENCLOSURE 1

**REVIEW OF THE JUNE 1995 DESCRIPTION
OF CURRENT CONDITIONS FOR THE
CHEMICAL WASTE MANAGEMENT FACILITY, VICKERY, OHIO**

(Two Pages)

**REVIEW OF THE JUNE 1995 DESCRIPTION
OF CURRENT CONDITIONS FOR THE
CHEMICAL WASTE MANAGEMENT FACILITY, VICKERY, OHIO**

PRC Environmental Management, Inc. (PRC), reviewed the June 1995 Description of Current Conditions for the Chemical Waste Management (CWM) Facility in Vickery, Ohio for overall technical adequacy and to determine if comments from the U.S. Environmental Protection Agency (EPA) on the previous version of the document dated April 1995 were adequately addressed. The majority of the CWM responses adequately address their respective EPA comment; however, the following specific comments identify responses that do not adequately address the comments.

The comments provided below refer to specific sections of the Description of Current Conditions. The comments presented below are indicated by section number, page number, and paragraph number. When paragraphs are cited, the first complete paragraph on a page is designated "Paragraph 1." If comments are made on a paragraph that carries over from a previous page, the incomplete paragraph is designated "Paragraph 0."

1. **Section 3.2, Page 3-2, Paragraph 1.** Previous specific comment 1 requested that the precipitation/evapotranspiration ratio be provided. The text was revised to provide a ratio of 56.89; however, this ratio seems to be unrealistically high because it indicates that the precipitation rate is almost 57 times higher than the evapotranspiration rate. Using the mean annual amount of precipitation listed on page 3-1 (33 inches) to calculate evapotranspiration would equal 0.58 inches. However, this value is unlikely. The ratio should be revised or the text should be revised to support a ratio of 56.89.
2. **Section 4.4.2, Page 4-14.** Previous specific comment 2 requested an explanation for the changes in the potentiometric surface and gradient in the bedrock aquifer beneath the facility. The text was revised to state that the changes may be due to boundary conditions or permeability contrasts in the bedrock aquifer. However, the text states that these boundary condition locations have not been determined exactly because they are not a significant factor in determining groundwater flow directions beneath the facility. Therefore, the conditions controlling groundwater flow need to be determined, especially if a groundwater control or extraction system is installed.

In addition, the original comment also requested information concerning possible artesian conditions in the bedrock aquifer beneath the facility. The facility responded to this comment by stating in its response to the Notice of Deficiencies letter that artesian conditions are present in the bedrock aquifer beneath the facility; however, page 3-9 of the revised text states that no artesian conditions exist in any of the wells at the facility. This discrepancy needs to be resolved.



Chemical Waste Management, Inc.

3956 State Route 412
Vickery, Ohio 43464
419/547-7791

FEDERAL EXPRESS

July 3, 1995

United States Environmental Protection Agency
Region V

Attention: Mr. Thomas Matheson HRP - 8J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: Response to Comments - RCRA Facility Investigation (RFI) - Report on Current
Conditions - Vickery Facility, Chemical Waste Management, Inc.
EPA ID. No. OHD 020 273 819

Dear Mr. Matheson:

In response to your letter dated May 31, 1995 received June 5, 1995, attached are our comments together with the amended pages for four (4) copies of the revised Current Conditions Report. The pages, where appropriate, have been renumbered and the table of contents revised. A list of replacement pages and tables is provided. Please replace the amended pages.

Copies have been sent to the Ohio Environmental Protection Agency as requested and a copy will be placed in the CWM Vickery Information Repository. Should you have any questions regarding this matter, please contact Michael Curry or Steve Lonneman at (419)547-7791.

I certify under penalty of law that this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

CHEMICAL WASTE MANAGEMENT, INC.

A handwritten signature in dark ink, appearing to read "F.G. Nicar".

F.G. Nicar
General Manager

Attachments

United States Environmental Protection Agency
Mr. Thomas Matheson
March 31, 1995
Page 2

cc w/attachments: Edwin Lim Ohio EPA, DHWM Columbus
Chuck Hull Ohio EPA, NWDO Bowling Green
CWM Vickery Information Repository
Michael Curry
Agency Correspondence File

cc w/o attachments: Steve Lonneman
Sandy Clark
Bob Heitman, Rust E&I (Bensalem)
Richard Zweig, Rust E&I (Bensalem)

Chemical Waste Management, Inc.
Response to Notice of Deficiencies (NODs)
RFI Report on Current Conditions

RESPONSE TO GENERAL COMMENT

Comment 1

The section of text on page 3-7 in Section 3.4.2 has been moved to page 4-9 in Section 4.3.2.

RESPONSE TO SPECIFIC COMMENTS

Comment 1

The precipitation/evapotranspiration ratio is provided on page 3-2.

Comment 2.

Additional text has been added to provide for a more precise explanation of the drawdown boundaries. Golder Associates completed a detailed hydrogeologic study on the site and the information from this text is provided.

The bedrock aquifer does encounter artesian conditions as the head rises within the aquifer 25 feet above the top of the bedrock.

Comment 3

Information on discharges to the on-site surface ditches is provided on page 4-18.

Comment 4

Seasonal variations of the units for January and July are provided as Figures 4-18 through 4-23.

NEW GENERAL COMMENTS

Comment 1

All efforts have been made to accurately state if the closures were approved and, if so, which agency was the approving agency.

Comment 6

Page 5-67 has been modified accordingly.

Comment 7

Page 5-81 has been modified accordingly.

Comment 8

A unit description of the horizontal holding tank is provided on page 5-88.

Comment 9

The waste flowed through drains in the floor to the sluice pit as described on page 5-95.

Comment 10

This was a previous error. The "unknown" has been stricken from the text within the description of each of these SWMUs.

Comment 11

The text has been modified to provide clarity. SWMU 39 or old FAT-2 containment is presently vacant but has been used in the past to provide secondary containment for FAT-2, which was moved to Pump House 4.

Comment 12

The text has been modified accordingly.

Comment 13

The text has been modified. The casing failure occurred at a depth of greater than 2,000 feet. No possible impact to groundwater occurred.

Comment 14

Table 5-1 has been modified.

Comment 15

Figure 5-1 has been modified to include note 2 which specifies which table names the SWMUs.

MAY 3 1 1995

HRP-8J

CERTIFIED MAIL: P 401 182 630
RETURN RECEIPT REQUESTED

Fred G. Nicar, General Manager
Chemical Waste Management, Inc.
Vickery Facility
3956 State Route 412
Vickery, Ohio 43464

RE: Chemical Waste Management, Inc.
Vickery Facility (CWM-Vickery)
Report on Current Conditions (ROCC)
OHD 020 273 819

Dear Mr. Nicar:

The United States Environmental Protection Agency (U.S. EPA), has reviewed the revised ROCC for the CWM-Vickery facility, dated April 1995, for overall technical adequacy and compliance with comments from the U.S. EPA on the previous version of the ROCC report dated December 1994.

Enclosed are the U.S. EPA's comments on the revised ROCC. It is imperative that CWM-Vickery **adequately** respond to these comments in its next revision to this document. CWM-Vickery shall submit the revised ROCC within 30 days after receipt of this letter. The modified ROCC shall be prepared in accordance with the following editorial protocol or convention:

1. Old language is overstruck.
2. New language is capitalized.
3. Page headers must indicate date of submission.
4. If any significant changes are necessary, pages should be renumbered, table of contents revised, and complete sections provided as required.
5. An itemized list of all replacement pages, sections, tables, etc. that are to be replaced in the modified submission, shall be provided.

In addition to four copies of the revised ROCC required by the U.S. EPA, please send one copy of each to:

Edwin Lim
Ohio EPA, DHWM
P.O. Box 1049
1800 WaterMark Drive
Columbus, OH 43266-0149

Chuck Hull
Ohio EPA, NWDO
347 N. Dunbridge Rd.
Bowling Green, OH 43402

Birchard Public Library
of Sandusky County
Infor. Repository
423 Croghan St.
Fremont, OH 43215

If you have questions please contact me at (312) 886-7569.

Sincerely,

Thomas Matheson, Corrective Action Project Manager
RCRA Permitting Branch

cc: Ed Lim, OEPA/CO
Chuck Hull, OEPA/NEDO

HRP-8J:MATHESON:twm:5/25/95:6-7596: F:\USER\TMATHESO\CWMVICK\CC_COM2.LTR

CONCURRENCE REQUESTED FROM RPB			
OTHER STAFF	RPB STAFF	OHIO SECTION CHIEF	RPB BRANCH CHIEF
5/31/95 PB	True 5/31/95		

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5
COMMENTS ON THE CHEMICAL WASTE MANAGEMENT - VICKERY, INC.
RFI REPORT ON CURRENT CONDITIONS
DATED APRIL 1995**

The following are the U.S. EPA's comments on the revised ROCC for CWM-Vickery, dated April 1995. The U.S. EPA's comments on the previous report were submitted to the facility on March 2, 1995. The majority of the CWM responses adequately address its respective U.S. EPA comments; however, the following general and specific comments identify responses that do not adequately address the comments. Comments that CWM adequately addressed are not discussed further in the text that follows. In addition, based on the review of the revised ROCC, new general and specific comments have been prepared. The new comments follow comments on the CWM-Vickery responses to the U.S. EPA's general and specific comments on the December 1994 version of the ROCC.

RESPONSE TO GENERAL COMMENT

1. Previous comment 2 stated that site-specific geological and hydrogeological data presented in Section 3.0 should instead be presented in Section 4.0. CWM's response states that site specific information was moved to Section 4.0. However, site-specific geological information is presented on Page 3-7 in Section 3.4.2. The text should be revised to consolidate and present all site-specific geological data in one section to aid in the review.

RESPONSE TO SPECIFIC COMMENTS

The comments provided below and in the New Specific Comments Section refer to specific sections of the ROCC. Comments are presented below generally by section number, page number, and paragraph number. When paragraphs are cited, the first complete paragraph on a page is designated "Paragraph 1." If comments are made on a paragraph that carries over from a previous page, the incomplete paragraph is designated "Paragraph 0."

1. **Section 3.2, Page 3-1.** Previous comment 3 requested that the precipitation/evapotranspiration ratio be provided. Although there was a discussion on evapotranspiration added to the text, no ratio was included. This ratio should be provided in the revised text.
2. **Section 4.4.2, Page 4-5, Paragraph 0.** Previous specific comment 15 requested an explanation of the changes in the potentiometric surface and gradient in the bedrock aquifer beneath the facility. The text was revised to state that the potentiometric and gradient changes may be due to drawdown boundaries or permeability contrasts in the bedrock aquifer. The text does not clearly state how these conclusions were reached. Also, it is not clear if the feasibility of these conclusions was investigated in the field. The text should clarify the rationale for the conclusions that contend drawdown boundaries or permeability contrasts may be responsible for the potentiometric surface and gradient changes beneath the facility. This comment also applies to previous specific comments 22 and 24.

Previous specific comment 15 also requested information concerning possible artesian conditions in the bedrock aquifer beneath the facility. This information was apparently not included in the revised text. The text should be revised to provide this information.

3. **Section 4.4.2, Page 4-5, Paragraphs 1 and 2.** Previous specific comment 16 requested information on whether groundwater beneath the facility discharges to surface water in the on-site ditch and also requested information concerning seasonal changes in groundwater levels. None of this information was apparently provided in the revised text; therefore, the text should be revised to present this information.

Previous specific comment 16 also requested additional discussion concerning groundwater flow toward a groundwater valley located east of the on-site ditch. The text was revised to state that assumed water levels in two dry monitoring wells were used to produce the original groundwater potentiometric surface map showing the groundwater valley. It appears these two wells were not used as data points to produce the revised groundwater potentiometric map, which does not indicate the groundwater valley. However, elimination of these two dry wells does not eliminate the possibility of a groundwater valley. In fact, because the wells are dry indicates that the groundwater levels in the area may be actually lower than was previously assumed and therefore, may indicate the presence of a groundwater valley or at least a groundwater low. The text should be revised to further discuss the presence of a groundwater valley.

4. **Section 4, Figures 4-10 and 4-11.** Previous specific comment 23 requested a presentation of seasonal variations in the potentiometric surface. This information apparently was not provided; therefore, this information should be provided in the revised document.

NEW GENERAL COMMENTS

1. The text states that some units were non-Resource Conservation Recovery Act (RCRA) closed but does not identify the regulatory agency that approved the non-RCRA closure. For example, in Section 5.2, page 5-59, the text states Solid Waste Management Unit (SWMU) 14 was "Inactive; non-RCRA closed; 1976", but does not state what agency approved the closure. A reference is made, however, to a report submitted by Environmental Testing and Certification in 1983. The text should clarify whether non-RCRA closures were approved by a regulatory agency and if closures were approved, both the agency approving the closure and the date of closure should be specified.
2. In Section 2.0 the report states that the facility managed oils. However, in Section 5.2 the report states that polychlorinated biphenyls (PCBs) are a waste constituent found in many SWMUs. This causes the inference to be made that PCB-containing oils were managed at the facility. The report should be revised to state earlier in the text that PCB-containing oils were managed at the facility.

3. The unit descriptions presented in Section 5.2 are vague. In many instances no physical description of the unit is given, only the unit's function is stated. For example, in Section 5.2, for SWMU 46, on page 5-128, no physical description of the injection well is given. This section should include a description of the unit's configuration, capacity, materials of construction, dimensions and material thicknesses. In some cases no mention is made regarding whether a unit is located above or below ground. For example, the unit description for SWMU 28, on page 5-92, does not state whether the unit is located above or below ground.
4. The statement "There is a groundwater monitoring system in place around the facility and groundwater monitoring wells have determined that no release to groundwater has been detected" is used to indicate no releases to groundwater have occurred from various SWMUs. According to Section 5.2, a groundwater monitoring system is also located around surface impoundments 1 through 12 (SWMUs 1 through 11) and the closure cell. Groundwater monitoring wells located around the facility will indicate whether or not contaminants are migrating off site, but will not necessarily indicate if a release to groundwater from SWMUs 12, 13, 14, 15, 17, 18, and 19 has occurred within the facility boundaries. A groundwater monitoring system around surface impoundments 1 through 12 (SWMUs 1 through 11) will provide an indication of potential releases from these SWMUs. However, this groundwater monitoring system will not adequately assess whether a release has occurred from SWMUs 12, 13, 14, 15, 17, 18, and 19, where the text states that these groundwater monitoring systems indicate that groundwater is not a potential migration pathway. The text should be revised to provide an adequate rationale for stating groundwater is not a potential migration pathway.
5. Based on the description provided in the report in Section 2.0, the closure cell consists of material from the waste pile that contained material resulting from the closure of surface impoundments 4, 5, 7, the Oil Reclamation Facility, and other miscellaneous contaminated soils. Based on this description, the closure cell should be considered to be a SWMU.

NEW GENERAL COMMENTS

1. **Section 2.2, Page 2-1, Paragraph 3.** The text states the facility began to accept various industrial wastes in 1961 and these materials were stored in surface impoundments. However, section 2-2, page 2-2, paragraph 2, states the first surface impoundment was constructed in 1964. This discrepancy should be remedied and the text should be revised accordingly.
2. **Section 2.2, Page 2-3, Paragraph 4.** The text states the soils beneath the closure cell were excavated. No method of waste disposition was specified and no discussion of any potential contamination existing under the unit was given. The text should be revised to discuss the disposition of these soils along with a description of the types of contamination found.

3. **Section 4.4.3, Page 4-14, Paragraph 3.** The text states that hydraulic conductivities may be on the order of 10^{-6} centimeter per second (cm/sec) and may be due to fractures in the soil. In section 5.2, page 5-76, paragraph 3, the text states the potential for migration to groundwater may be minimal because the clay layer would impede the migration of contaminants. The presence of fractures in the soil may indicate the clay layer is not continuous and contaminants therefore, may have the potential to migrate to groundwater. The text should be revised to clarify these issues.
4. **Section 5.1.1, Page 5-3, Paragraph 3.** The text states that analyses of soil samples collected from the former landfarm area north of the former surface impoundments 11 and 12 (SWMUs 10 and 11) indicated that no hazardous wastes were present. The text should also indicate if soil samples were collected and analyzed for hazardous constituents. The text describing soil sampling activities should be expanded to include a description of what hazardous constituents are found in elevated concentrations.
5. **Section 5.2, Pages 5-10 to 5-54, SWMUs 1 to 14.** The text states the units managed D004 to D011 metals, but the closure sampling section does not include a discussion of soil sampling for metals analyses at the unit. In addition, because clean closure took place at SWMUs 11 and 12, a discussion of closure results should be included.
6. **Section 5.2, Pages 5-61 to 5-63, SWMU 15.** The text states that the unit managed constituents with D004 to D011 metals. The text also states under the Release History Section "In 1980, the cyanide reactor exploded due to incorrect addition of chromic acid to hydrogen peroxide/cyanide, resulting in the release of 5,000 gallons of waste to the air." However, the previous sampling data section states that low levels of volatile organic compounds (VOC) are still present in soil, but does not indicate if soils have been monitored for cyanides. The text should indicate if the unit has been monitored for cyanides. If any analytical results for cyanide exist, they should be presented in this text.
7. **Section 5.2, Pages 5-75 to 5-77, SWMU 20.** The text states the underground storage tank at SWMU 20 was in operation prior to 1983 and after 1994, but the period of operation section states the tank was used from 1983 to 1994. This discrepancy should be corrected and the text revised accordingly. Also the text states the potential for soil as a migration pathway is low because contaminated soils were remediated with the concrete cistern. The previous sampling data section indicates that soil samples from the area outside the cistern were collected and analyzed for PCBs during the removal of the original cistern. The constituents section indicates the unit managed unused tanker samples, lab wastes (everything except F-solvents), PCBs, VOCs, polynuclear aromatic hydrocarbons (PAH), phenols, D004 to D011 metals, and unknowns. It is not clear if soil samples collected from the area were analyzed for any constituents besides PCBs. The text should be clarified to address these issues.

8. **Section 5.2, Page 5-84, SWMU 24.** The gases vented to the scrubber from the grit chambers do not meet the definition of a solid waste in 40 CFR part 260. The contaminated scrubber liquid that flows to the large horizontal holding tank does meet the definition of a solid waste, so the large horizontal holding tank is actually the SWMU. The text should be revised so the unit description provides more information on the large horizontal holding tank, such as construction materials, capacity, release controls.
9. **Section 5.2, Page 5-90, SWMU 27.** The release history section for SWMU 27 states in 1985, an overflow resulted in 50 gallons of acid waste being released to the floor. Documentation states the waste flowed through holes in the floor. However, the soil migration pathway section states the potential for migration was "moderate" before the drains were plugged. The text in this section should be clarified to specify whether holes, plugged drains, or both were present in the floor.
10. **Section 5.2, Pages 5-98 through 5-113, SWMUs 31 through 38.** SWMUs 31 through 38 are listed to have managed unknown constituents. The unit descriptions for SWMUs 31 through 38 state that they pump or direct their wastes to the injection wells. If so, this means that the injection wells are injecting unknown wastes into the ground. This issue should be clarified and the text revised accordingly.
11. **Section 5.2, Page 5-114, SWMU 39.** The unit description for SWMU 39 states "Secondary Containment for FAT-2, which was moved to Pump House 4 in 1990." This does not describe a SWMU. This section should be clarified or expanded.
12. **Section 5.2, Page 5-132, SWMU 48.** The release history states that between 700 and 1,000 gallons of waste acid was released due to the failure of a blind flange, yet the potential for release to groundwater is stated to be moderate or "minimal". The text in this section should be clarified and the potential for release should be revised to be moderate to high.
13. **Section 5.2, SWMU 50, Page 5-136.** The text should be revised to include a more detailed discussion of the casing failure in the unit, such as the location of the casing failure. The potential for release to groundwater should also be changed to high.
14. **Table 5-1.** The term "pond" is still used rather than "surface impoundment". Solid waste management unit names in the table do not match those used in the text. The table should be modified so that SWMU names are consistent throughout.
15. **Figure 5-1.** The figure does not include a legend to identify SWMU names. The figure should include a listing of SWMU names or should reference a table that includes SWMU names.

END OF COMMENTS



May 23, 1995

Mr. Tom Matheson
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Review of April 1995 "Report on Current Conditions," "RCRA Facility Investigation (RFI) Work Plan," and "Quality Assurance Project Plan" (QAPP) for Chemical Waste Management, Vickery, Ohio
Contract No. 68-W4-0007, Work Assignment No. R05021**

Dear Mr. Matheson:

PRC Environmental Management, Inc. (PRC), has enclosed one paper copy and one disk copy of its technical review comments on the above-referenced documents. PRC's comments on the Report on Current Conditions, RFI Work Plan, and QAPP are included in Enclosures 1, 2, and 3, respectively.

PRC reviewed these documents for overall technical adequacy and to ensure that U.S. Environmental Protection Agency (EPA) March 2, 1995, comments on the December 1994 Report on Current Conditions were addressed. The subject documents have numerous deficiencies, inconsistencies, and inaccuracies. In general, the Report on Current Conditions fails to provide sufficient information on the current facility status to support conclusions regarding the need for corrective action. The RFI work plan fails to provide a technically sound approach to satisfying project objectives. The QAPP does not adequately explain how the facility will ensure the quality of RFI data. PRC's general and specific review comments are enclosed.

If you have any questions or comments, please call me at (312) 856-8786.

Sincerely,

A handwritten signature in black ink, appearing to read "Mary Wojciechowski". The signature is fluid and cursive.

Mary Wojciechowski
Contractor Project Manager

Enclosures (4)

cc: Bernie Orenstein, EPA Region 5 (letter only)
Ed Schuessler, PRC (letter only)
Jennifer Force, PRC
Rick Hersemann, PRC
Tim Schlichting, PRC
Cathy Collins, PRC

ENCLOSURE 1

**TECHNICAL REVIEW COMMENTS ON REPORT ON CURRENT CONDITIONS
RCRA FACILITY INVESTIGATION
CHEMICAL WASTE MANAGEMENT FACILITY, VICKERY, OHIO**

**TECHNICAL REVIEW COMMENTS ON "REPORT ON CURRENT CONDITIONS
RCRA FACILITY INVESTIGATION"
AT THE CWM-VICKERY FACILITY**

PRC Environmental Management, Inc. (PRC), reviewed the revised Report on Current Conditions RCRA Facility Investigation (ROCCRFI) Chemical Waste Management-Vickery (CWM), dated April 1995, for overall technical adequacy and compliance with comments from the U.S. Environmental Protection Agency (EPA) on the previous version of the ROCCRFI report dated December 1994. EPA's comments on the previous report were submitted to the facility on March 2, 1995. The majority of the CWM responses adequately address their respective EPA comment; however, the following general and specific comments identify responses that do not adequately address the comments. Comments that CWM adequately addressed are not discussed further in the text that follows. In addition, PRC generated new general and specific comments based on its review of the revised ROCCRFI report. These comments follow comments on the responses to EPA's general and specific comments below.

RESPONSE TO GENERAL COMMENT

1. Previous comment 2 stated that site-specific geological and hydrogeological data presented in Section 3.0 should instead be presented in Section 4.0. CWM's response states that site specific information was moved to Section 4.0. However, site-specific geological information is presented on Page 3-7 in Section 3.4.2. The text should be revised to consolidate and present all site-specific geological data in one section to aid in the review.

RESPONSE TO SPECIFIC COMMENTS

The comments provided below and in the New Specific Comments Section refer to specific sections of the ROCCRFI. Comments are presented below generally by section number, page number, and paragraph number. When paragraphs are cited, the first complete paragraph on a page is designated "Paragraph 1." If comments are made on a paragraph that carries over from a previous page, the incomplete paragraph is designated "Paragraph 0."

1. **Section 3.2, Page 3-1.** Previous comment 3 requested that the precipitation/evapotranspiration ratio be provided. Although there was a discussion on evapotranspiration added to the text, no ratio was included. Because this ratio was apparently not provided, it should be provided in the revised text.
2. **Section 4.4.2, Page 4-5, Paragraph 0.** Previous specific comment 15 requested an explanation of the changes in the potentiometric surface and gradient in the bedrock aquifer beneath the facility. The text was revised to state that the potentiometric and gradient changes may be due to drawdown boundaries or permeability contrasts in the bedrock aquifer. The text does not clearly state how these conclusions were reached. Also, it is not clear if the feasibility of these conclusions was investigated in the field. The text should clarify the rationale for the conclusions that contend drawdown boundaries or permeability contrasts may be responsible for the potentiometric surface and gradient changes beneath the facility. This comment also applies to previous specific comments 22 and 24.

Previous specific comment 15 also requested information concerning possible artesian conditions in the bedrock aquifer beneath the facility. This information was apparently not included in the revised text. The text should be revised to provide this information.

3. **Section 4.4.2, Page 4-5, Paragraphs 1 and 2.** Previous specific comment 16 requested information on whether groundwater beneath the facility discharges to surface water in the on-site ditch and also requested information concerning seasonal changes in groundwater levels. None of this information was apparently provided in the revised text; therefore, the text should be revised to present this information.

Previous specific comment 16 also requested additional discussion concerning groundwater flow toward a groundwater valley located east of the on-site ditch. The text was revised to state that assumed water levels in two dry monitoring wells were used to produce the original groundwater potentiometric surface map showing the groundwater valley. It appears these two wells were not used as data points to produce the revised groundwater potentiometric map, which does not indicate the groundwater valley. However, elimination of these two dry wells does not eliminate the possibility of a groundwater valley. In fact, because the wells are

dry indicates that the groundwater levels in the area may be actually lower than was previously assumed and therefore, may indicate the presence of a groundwater valley or at least a groundwater low. The text should be revised to further discuss the presence of a groundwater valley.

4. **Section 4, Figures 4-10 and 4-11.** Previous specific comment 23 requested a presentation of seasonal variations in the piezometric surface. This information apparently was not provided; therefore, this information should be provided in the revised document.

NEW GENERAL COMMENTS

1. The text states that some units were non-Resource Conservation Recovery Act (RCRA) closed but does not identify the regulatory agency that approved the non-RCRA closure. For example, in Section 5.2, page 5-59, the text states Solid Waste Management Unit (SWMU) 14 was "Inactive; non-RCRA closed; 1976", but does not state what agency approved the closure. A reference is made, however, to a report submitted by Environmental Testing and Certification in 1983. The text should clarify whether non-RCRA closures were approved by a regulatory agency and if closures were approved, both the agency approving the closure and the date of closure should be specified.
2. In Section 2.0 the report states that the facility managed oils. However, in Section 5.2 the report states that polychlorinated biphenyls (PCBs) are a waste constituent found in many SWMUs. This causes the inference to be made that PCB-containing oils were managed at the facility. The report should be revised to state earlier in the text that PCB-containing oils were managed at the facility.
3. The unit descriptions presented in Section 5.2 are vague. In many instances no physical description of the unit is given, only the unit's function is stated. For example, in Section 5.2, for SWMU 46, on page 5-128, no physical description of the injection well is given. This section should include a description of the unit's configuration, capacity, materials of construction, dimensions and material thicknesses. In some cases no mention is made regarding whether a unit is located above or below ground. For example, the unit description

for SWMU 28, on page 5-92, does not state whether the unit is located above or below ground.

4. The statement "There is a groundwater monitoring system in place around the facility and groundwater monitoring wells have determined that no release to groundwater has been detected" is used to indicate no releases to groundwater have occurred from various SWMUs. According to Section 5.2, a groundwater monitoring system is also located around surface impoundments 1 through 12 (SWMUs 1 through 11) and the closure cell. Groundwater monitoring wells located around the facility will indicate whether or not contaminants are migrating off site, but will not necessarily indicate if a release to groundwater from SWMUs 12, 13, 14, 15, 17, 18, and 19 has occurred within the facility boundaries. A groundwater monitoring system around surface impoundments 1 through 12 (SWMUs 1 through 11) will provide an indication of potential releases from these SWMUs. However, this groundwater monitoring system will not adequately assess whether a release has occurred from SWMUs 12, 13, 14, 15, 17, 18, and 19, where the text states that these groundwater monitoring systems indicate that groundwater is not a potential migration pathway. The text should be revised to provide an adequate rationale for stating groundwater is not a potential migration pathway.
5. Based on the description provided in the report in Section 2.0, the closure cell consists of material from the waste pile that contained material resulting from the closure of surface impoundments 4, 5, 7, the Oil Reclamation Facility, and other miscellaneous contaminated soils. Based on this description, the closure cell should be considered to be a SWMU.

NEW GENERAL COMMENTS

1. **Section 2.2, Page 2-1, Paragraph 3.** The text states the facility began to accept various industrial wastes in 1961 and these materials were stored in surface impoundments. However, section 2-2, page 2-2, paragraph 2, states the first surface impoundment was constructed in 1964. This discrepancy should be remedied and the text should be revised accordingly.

2. **Section 2.2, Page 2-3, Paragraph 4.** The text states the soils beneath the closure cell were excavated. No method of waste disposition was specified and no discussion of any potential contamination existing under the unit was given. The text should be revised to discuss the disposition of these soils along with a description of the types of contamination found.
3. **Section 4.4.3, Page 4-14, Paragraph 3.** The text states that hydraulic conductivities may be on the order of 10^{-6} centimeter per second (cm/sec) and may be due to fractures in the soil. In section 5.2, page 5-76, paragraph 3, the text states the potential for migration to groundwater may be minimal because the clay layer would impede the migration of contaminants. The presence of fractures in the soil may indicate the clay layer is not continuous and contaminants therefore, may have the potential to migrate to groundwater. The text should be revised to clarify these issues.
4. **Section 5.1.1, Page 5-3, Paragraph 3.** The text states that analyses of soil samples collected from the former landfarm area north of the former surface impoundments 11 and 12 (SWMUs 10 and 11) indicated that no hazardous wastes were present. The text should also indicate if soil samples were collected and analyzed for hazardous constituents. The text describing soil sampling activities should be expanded to include a description of what hazardous constituents are found in elevated concentrations.
5. **Section 5.2, Pages 5-10 to 5-54, SWMUs 1 to 14.** The text states the units managed D004 to D011 metals, but the closure sampling section does not include a discussion of soil sampling for metals analyses at the unit. In addition, because clean closure took place at SWMUs 11 and 12, a discussion of closure results should be included.
6. **Section 5.2, Pages 5-61 to 5-63, SWMU 15.** The text states that the unit managed constituents with D004 to D011 metals. The text also states under the Release History Section "In 1980, the cyanide reactor exploded due to incorrect addition of chromic acid to hydrogen peroxide/cyanide, resulting in the release of 5,000 gallons of waste to the air." However, the previous sampling data section states that low levels of volatile organic compounds (VOC) are still present in soil, but does not indicate if soils have been monitored

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that the injection wells are injecting unknown wastes into the ground. This issue should be clarified and the text revised accordingly.

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15. **Figure 5-1.** The figure does not include a legend to identify SWMU names. The figure should include a listing of SWMU names or should reference a table that includes SWMU names.

ENCLOSURE 2

**TECHNICAL REVIEW COMMENTS ON
THE RCRA FACILITY INVESTIGATION WORK PLAN FOR THE
CWM-VICKERY FACILITY**

**TECHNICAL REVIEW COMMENTS ON THE RCRA
FACILITY INVESTIGATION WORK PLAN FOR THE
CWM-VICKERY FACILITY**

PRC Environmental Management, Inc. (PRC), conducted a technical review of the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan for the Chemical Waste Management (CWM) - Vickery, Inc. (CWM-Vickery), facility in Vickery, Ohio. The RFI work plan, dated April 1995, was prepared by RUST Environment & Infrastructure, Inc. (RUST), for CWM Vickery. PRC reviewed the RFI work plan for technical quality, accuracy, and conformance with U.S. Environmental Protection Agency (EPA) RFI guidance documents. PRC's general and specific comments on the RFI work plan are provided below.

GENERAL COMMENTS

The approach for conducting the RFI includes reviewing existing groundwater and surface water data, in addition to collecting soil samples during Phase I of the RFI. Based on the analytical results and the review of existing data, monitoring wells may need to be installed and a Phase II investigation may need to be conducted. Groundwater sampling appears to be warranted for some solid waste management units (SWMU) and areas of concern (AOC), because the existing groundwater monitoring well network does not monitor SWMUs 12, 13, 14, 15, 17, and 21 through 52 or AOCs B, C, D, E, F, and H. The proposed approach will potentially lead to a Phase III investigation if all RFI objectives for determining the rate and extent of contamination are to be met. This approach will also delay the schedule for completing the RFI. CWM-Vickery should evaluate the existing data and revise the work plan accordingly in order to meet the objectives of the RFI and to complete the RFI in a timely manner.

The RFI work plan proposes analyzing samples for target compound list (TCL) and target analyte list (TAL) parameters. However, the work plan does not include a table listing the TCL and TAL parameters. Because this investigation is an RFI, samples should be analyzed for the parameters listed in Appendix IX of 40 Code of Federal Regulations (CFR) Part 264. The work plan should be revised globally to insert Appendix IX for TCL and TAL parameters or the work plan should explain why TCL and TAL parameters are appropriate for this RFI.

A table listing the appropriate parameters, the analytical methods for each parameter, and the detection limits for each parameter should be included in the work plan.

The RFI work plan does not include a figure that clearly identifies the surface water drainage patterns near all SWMUs and AOCs. The work plan should include a figure that identifies SWMU and AOC locations and uses arrows to indicate surface water flow directions. This information would be helpful in identifying potential sampling locations at SWMUs and AOCs and for determining potential off-site receptors.

The RFI work plan proposes collecting soil samples every 5 feet from the top of the SWMU to the termination of the borehole. However, at some SWMUs, the top of the SWMU, the depth of the clay fill and natural soil interface, or the depth to the groundwater interface in the lacustrine unit is not known with certainty. At SWMUs where the top of the SWMU, the clay and natural soil interface, or the groundwater interface is not known, continuous split-spoon soil sampling techniques should be used from the top of the borehole to determine from where the first investigative samples will be collected. The text should be revised accordingly, to include a contingency for continuous split-spoon soil sampling techniques. The text should also describe how the field screening program will be used for terminating boreholes.

The RFI work plan does not include a figure that shows the locations of the SWMUs and AOCs in relation to the monitoring wells that are included in the quarterly groundwater sampling efforts. The work plan should include a figure that clearly presents the locations of all SWMUs, AOCs, and monitoring wells at the facility. The direction of groundwater flow should also be presented in this figure. This information would be helpful in identifying groundwater data gaps.

SPECIFIC COMMENTS

The comments provided below refer to specific sections of the RFI work plan. Comments are presented below generally by section number, page number, and paragraph number. When paragraphs are cited, the first complete paragraph on a page is designated "Paragraph 1." If

comments are made on a paragraph that carries over from a previous page, the incomplete paragraph is designated "Paragraph 0."

Section 3.3.2, Page 10, Paragraph 1. The text states that pumping the on-site truck wash well produces a radial flow pattern in the bedrock aquifer; however, the text does not include the radius of influence for the truck wash well. Also, the work plan does not include a figure that shows the direction of groundwater flow. The work plan should be revised to include this information.

Section 3.3.2, Page 10, Paragraph 2. This paragraph discusses the natural groundwater flow direction and gradient conditions in the bedrock aquifer. The text in this paragraph should be revised to include the direction of natural groundwater flow in the bedrock aquifer.

Section 5.2.5, Page 19, Paragraph 1. This section discusses collection of quality control (QC) samples during the Phase I RFI field effort; however, matrix spike/matrix spike duplicate (MS/MSD) samples are not included in this discussion. However, EPA guidance requires that one MS/MSD sample be collected for every 20 investigative samples for each matrix. Therefore, the text and tables should be revised accordingly to include MS/MSD samples.

Section 5.2.6.1.1, Page 19, Paragraph 4. This section states that duplicate analyses will be performed for one out of every 20 investigative samples for each matrix. However, EPA guidance requires that duplicate samples be collected for one out of every 10 investigative samples for each matrix. Therefore, the text and tables should be revised accordingly.

Section 5.2.6.1.2, Page 20, Paragraph 1. The text states that rinsate blanks will be submitted at the rate of one for every 20 investigative samples for each matrix that is being sampled. However, EPA guidance requires that rinsate samples be collected for one out of every 10 investigative samples for each matrix. Therefore, the text and the tables should be revised accordingly.

Section 5.5, Page 23, Paragraph 1. The text discusses the area where equipment decontamination will be conducted and how decontamination derived liquids will be managed. However, no discussion is presented to describe the specific decontamination procedures that will be used or the frequency during which equipment will be decontaminated. The text needs to be revised to include a discussion of the decontamination procedures that will be used during the RFI field effort. Because, the text states that decontamination water will be disposed of in the injection well system, the text should also provide documentation indicating that the injection well system can accept the decontamination water under the facility's underground injection control (UIC) permit.

Section 5.7.1, Page 24, Paragraph 2. The text discusses procedures that will be used to collect subsurface soil samples; however, the sampling procedures to be used for collecting the volatile organic compound (VOC) aliquot for subsurface soils are not discussed. The text should be revised to specify the sampling procedures that will be used to collect the VOC sample. In accordance with comments made during the pre-quality assurance project plan (QAPP) meeting on January 17, 1995, nonconventional sampling methods will be proposed to minimize the loss of VOCs during the sampling event.

Section 5.7.1, Page 24, Paragraph 2. The text in this paragraph states that all samples will be screened using a photoionization detector (PID); however, the screening procedures that will be used are not specified. It is unclear whether the PID readings will be taken from the split-spoon samples, the mixing bowl, or a headspace screening jar. The text needs to be revised to include a detailed discussion of the PID screening procedures that will be used.

Section 5.7.1, Page 24, Paragraph 4. According to the text, soil cuttings will be put back into the borehole after the borehole has been completed. However, the text in this section should be revised to state that cuttings will not be put into the borehole, but instead that boreholes will be grouted through the augers using a tremie pipe after the borehole is completed. The text should also be revised to state that soil cuttings will be placed in drums and will be properly disposed of.

Section 5.7.1, Page 24, Paragraph 4. This paragraph alludes to the methods used for borehole abandonment. The work plan should include a section that discusses borehole abandonment procedures in detail. Also, the management and disposal of investigation derived waste needs to be discussed in the text.

Section 5.8.1, Page 26, Paragraph 2. The text states that 32 soil samples will be collected from the former surface impoundments and refers to Figure 5-7. According to Figure 5-7, not all grid blocks within SWMUs 3 and 8 are proposed for sample collection. Based on the grid blocks, two additional soil samples need to be collected at SWMU 3 and two additional soil samples need to be collected at SWMU 8. The text and Figure 5-7 should be revised accordingly or documentation should be provided indicating why the grid blocks were omitted.

Section 5.8.1, Page 27, Paragraph 1. The text states that based on the results of the field screening, one soil sample will be collected from each borehole to be analyzed for VOCs and semivolatile organic compounds (SVOC). The text does not state the field screening criteria that will be used to select which sample will be submitted to the laboratory, such as the highest reading per borehole. Also, the text does not state the procedure to be used to collect soil samples if during the field screening, no VOCs are detected in any samples collected from a borehole. The text should be revised to provide more detail on the field screening criteria to be used for collecting soil samples. Finally, the text states that all samples collected from the borehole will be composited and sent to the laboratory for metal and pesticide/polychlorinated biphenyl (Pest/PCB) analyses. However, soil samples should not be composited from different depths, because if contamination is present, the compositing could dilute the sample concentrations to below levels of concern. Also, the exact depth from which the contamination occurred would not be able to be determined without conducting additional sampling. The text should be revised to indicate that discrete soil samples will be collected for metal and Pest/PCB analyses at the same interval as the samples to be analyzed for VOCs and SVOCs.

Section 5.8.2, Page 28, Paragraph 0. The text states that no soil samples will be collected from SWMU Group B because the units have been clean closed. Clean closure sampling is

not always adequate for corrective action activities. The text must document that no contamination migrated outside of the unit that was clean closed. The text should be revised to propose that soil samples be collected if this documentation does not exist.

Section 5.8.3, Page 28, Paragraph 2. The text states that 26 soil samples are proposed to be collected for SWMU Group C and refers to Figure 5-8. According to Figure 5-8, two grid blocks were omitted east of SWMU 9. The text and Figure 5-8 should be revised accordingly or documentation should be provided to indicate why the two grid blocks were omitted.

Section 5.8.3, Page 28, Paragraph 3. This paragraph discusses collecting soil samples from SWMU Group C. The text indicates that soil samples will be collected at depths beginning at the former top elevation of the surface impoundments; however, the text in paragraph 1 states that SWMU 19, which is included in SWMU Group C, was located above or adjacent to the surface impoundments. Therefore, the text should be revised to state that samples will be collected at depths corresponding to the top of SWMU 19.

Section 5.8.3, Page 29, Bullet 2. The text in this bullet states that if evidence indicates that waste from the surface impoundments has migrated to a depth greater than 2 feet below the depth of the surface impoundments, the field sampling program will be modified to characterize the subsurface soil until field screening does not indicate the existence of any contaminants. This contingency should be added to sampling discussions for other SWMU groups and AOCs.

Section 5.8.4, Page 30, Paragraph 2. The text states that 32 soil samples are proposed to be collected for SWMU Group D and refers to Figure 5-9. According to Figure 5-9, one grid node was omitted from an area southwest of SWMU 12. The text and Figure 5-9 should be revised accordingly or documentation should be provided indicating why the grid node was omitted.

Section 5.8.4, Page 30, Paragraph 3. The text in this paragraph indicates that soil samples will be collected from SWMU Group D at an approximate depth of 2.5 feet below the clay cap/*in situ* soil interface. However, Section 5.2 of the report on current conditions indicates

that soil from SWMU Group D was excavated and backfilled with clean fill. Therefore, samples should be collected from below the clean fill and natural soil interface. The text should be revised accordingly.

Section 5.8.5, Page 31, Paragraph 2. The text discusses soil sampling that is proposed for the three injection wells that may have leaked diesel fuel into adjacent soil as a result of casing failures. The text proposes collecting soil samples from above the groundwater interface and downgradient of each injection well. The text does not state the depths at which the casing failures occurred. However, the casing failures may have occurred at depths greater than 13 feet below ground surface (bgs), which is the approximate depth of the water table. If so, the proposed sampling depth will not define the rate and extent of contamination at these three injection wells. The text should provide additional justification for the proposed soil sample locations and depths. Also, if applicable, the text should explain why groundwater samples are not being collected from the geological formations that correspond to the locations where the casing failures occurred.

Section 5.8.7, Page 34, Paragraph 5. The text in this section discusses the soil sampling that will be conducted to characterize contamination at SWMU 27. The text states that two surface soil samples will be collected; however, the text in this section and in Section 5.2 of the report on current conditions states that in 1985, a spill occurred at this SWMU and released contaminants through holes in the floor. Therefore, subsurface soil samples should be collected beneath the floor of this SWMU in order to define the rate and extent of contamination. The text should be revised to include collection of subsurface soil samples from SWMU 27.

Section 5.8.7, Page 34, Paragraph 5. The text states that two soil samples will be collected from SWMU 27 and that three soil samples will be collected from SWMU 30. However, Figure 5-12 shows only four soil sample locations around SWMUs 27 and 30. Figure 5-12 should be revised to be consistent with the text in Section 5.8.7.

Section 5.8.7, Page 35, Paragraph 2. The text in this section states that surface soil samples will be collected at SWMU 29; however, SWMU 29 formerly had underground pipes that led

to the sluice pit. Therefore, to characterize contamination at SWMU 29, soil samples should be collected at a depth just below the depth of the former underground pipes and not at the surface. The text in the section needs to be revised accordingly.

Section 5.8.7, Page 35, Paragraph 2. The text in this section discusses soil sampling at SWMU 29; however, the discussion does not include the number of soil samples that will be collected. Therefore, the text should be revised to include the number of soil samples that will be collected.

Section 5.8.8, Page 36, Paragraph 2. The text proposes to collect surface soil samples from around each of the four active injection wells. The text does not explain how surface soil samples will be used to define the rate and extent of contamination from an injection well. In addition to the injection wells themselves, pipelines, transfer lines, and storage tanks that may be potential sources of spills at each injection well should be identified in the work plan and investigated during the RFI. Also, the text does not explain why groundwater samples are not being collected at the injection wells. The text should be revised to provide the rationale for proposed surface soil and, if applicable, groundwater sampling at the four active injection wells.

Section 5.8.9.1, Page 37, Paragraph 3. The text in this paragraph discusses the collection of soil samples at SWMU 15. The text indicates that samples will be collected from grid nodes and from random locations; however, the text does not clearly state how many samples will be collected from each sampling location or the depths from which the samples will be collected. The text in this section should be revised to clearly indicate how many samples will be collected from each sampling location and at what depths those samples will be collected.

Section 5.8.9.2, Page 38, Paragraph 1. The text in this paragraph discusses the collection of soil samples from SWMU 20. The text states that one soil sample will be collected from below the base of the concrete vault; however, the text does not provide the depth of the concrete vault, the total depth of the borehole, or the depth at which the sample will be collected. Therefore, the text should be revised to include this information.

Section 5.8.9.3, Page 38, Paragraph 4. The text states that one subsurface soil sample will be collected in each direction around the unit. This would indicate that a minimum of four subsurface soil samples will be collected. However, Figure 5-16 shows only one soil sampling location. The text, tables, and Figure 5-16 should be revised to indicate that a minimum of four subsurface soil samples will be collected from around SWMU 28.

Section 5.8.9.4, Page 39, Paragraph 1. The text states that one surface soil sample will be collected in the direction of surface water runoff. However, Figure 5-17 indicates that surface water runoff flows radially from SWMU 41. The text, tables, and Figure 5-17 should be revised to indicate that a minimum of four surface soil samples will be collected from around SWMU 41.

Section 5.8.9.5, Page 39, Paragraph 3. The text states that one surface soil sample will be collected to confirm that no residual contamination remains at SWMU 42. However, Figure 5-18 indicates that two surface soil samples will be collected. The report on current conditions indicates that SWMU 42 was an aboveground tank. To confirm that no residual contamination remains, both surface and subsurface soil samples should be collected. The text, tables, and Figure 5-18 should be revised to include both surface and subsurface soil samples at SWMU 42.

Section 5.8.9.6, Page 40, Paragraph 1. This paragraph states that one soil sample will be collected from beneath the base of the vault in the downgradient direction of groundwater flow at SWMU 43. However, the total depth of the borehole and the depth of the vault are not indicated. Also, Figure 5-19 indicates that five vaults are found at SWMU 43. Additional soil samples should be collected to characterize soil conditions downgradient of all five vaults. The text, tables, and Figure 5-19 should be revised to include the additional soil samples to be collected at SWMU 43. The depth of each vault and the proposed depths for sample collection should also be included.

Section 5.8.9.7, Page 40, Paragraph 3. The text in this paragraph describes collection of soil samples from SWMUs 44 and 45. The text states that the sample collected from SWMU 45 will be used to determine if contamination exists at SWMU 44; however, this practice is

not acceptable because the SWMUs are located about 500 feet apart. Samples should be collected either from off the asphalt surface in the direction of surface water flow or from downgradient of SWMU 44, depending upon the type of release that may have occurred. The text should be revised accordingly.

Section 5.9.1, Page 41, Paragraph 1. This section describes the method for collecting soil samples at AOC A. A figure should be included in this section to show the location of the maintenance tanks. The figure and the text should clearly indicate from which maintenance tanks samples will be collected under the RFI.

Section 5.9.2, Page 41, Paragraph 3. The text states that two soil samples will be collected at AOC B from locations where seven roll-off boxes and 100 small drums were formerly stored. However, the text does not indicate the size of these areas and Figure 5-21 does not show their locations. The size of these areas should be indicated in the text and in Figure 5-21 in order to evaluate whether two soil samples are adequate to characterize these areas.

Section 5.9.5, Page 43, Paragraph 1. The text states that AOC E collects surface water runoff and no samples are proposed to be collected. The text does not state from what parts of the facility the surface water comes and whether or not the surface water may be contaminated. The text should be revised to provide documentation that contaminated surface water runoff cannot enter AOC E. If this documentation does not exist, surface water or sediment sampling should be proposed for AOC E.

Section 5.9.8, Page 44, Paragraph 2. The text states that one sediment sample will be collected from Meyers Ditch to characterize the sediments for past releases that migrated to Meyers Ditch from aboveground pipelines. To characterize the extent of sediment contamination in Meyers Ditch, additional sediment sampling should be proposed in the text and tables. Also, a figure should be included to show the proposed sampling locations for AOC H to evaluate whether one soil sample is adequate per transfer pipeline leak location.

Section 5.9.9, Page 44, Paragraph 5. The text in this section describes collection of soil samples at AOC I. A figure should be included and referenced in this section to show the approximate location of the underground piping.

Section 5.9.9, Page 45, Paragraph 2. The text in this section describes collecting soil samples from AOC I. The text states that two grab samples will be collected from each test pit that uncovers buried lines; however, the rationale for the proposed sample locations and sample depths is not given. Therefore, the text should be revised to include the rationale for locations where soil samples will be collected.

Figure 5-21. This figure presents the proposed soil sampling locations at AOC B. The figure should be revised to indicate the physical boundaries of AOC B.

Figure 5-22. This figure presents the proposed soil sampling locations at AOC C. The figure should be revised to indicate the physical boundaries of AOC C.

Figure 5-23. This figure presents the proposed soil sampling locations at AOC F. The figure should be revised to indicate the physical boundaries of AOC F.

Tables 5-1 and 5-2. Tables 5-1 and 5-2 do not include duplicate, rinsate, or MS/MSD samples that will be collected during the RFI. Tables 5-1 and 5-2 should be revised to include duplicate, rinsate, and MS/MSD samples. Also, the tables should be revised to include the additional samples that were recommended above in Specific Comments 3, 4, 5, 11, 12, 13, 14, 17, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 37.

Section 7.1, Page 58, Paragraph 4, Bullet 2. The text states that one of the objectives of the RFI is to determine the nature and extent of groundwater contamination, if any. However, the work plan only proposes to review existing groundwater data at this time. The current groundwater monitoring network at the facility does not provide data for all SWMUs and AOCs at the facility (see General Comment 1). Thus, the existing data will not determine the nature and extent of groundwater contamination at these SWMUs and AOCs. The work plan, as written, does not meet this RFI objective. To fill these groundwater data gaps,

CWM-Vickery should have previously evaluated the existing groundwater data, determined data gaps, and proposed additional monitoring wells as part of the RFI. CWM-Vickery's approach is delaying the RFI process and will lead to Phase II and Phase III investigations. The work plan should be revised to include groundwater sampling at all SWMUs and AOCs where data gaps exist.

Section 7.2, Page 60, Paragraph 0. The text in this section states how existing groundwater data will be evaluated; however, the text does not include well construction or well integrity as a criterion for evaluation. The text should be revised accordingly.

Section 7.4, Page 61, Paragraph 1. The text states that the overall project management organization for this RFI is shown in Figure 7-1. However, Figure 7-1 is not included in the work plan. Also, the work plan does not include the resumes of all key staff, including technicians, who will be working on the RFI. Finally, the work plan does not include any information on subcontractors who will be working on the RFI. The work plan should be revised to include descriptions of the work experience and resumes of all key staff and subcontractors who will be working on the RFI. Also, Figure 7-1 should be included in the work plan.

Section 7.5, Page 62, Paragraph 1. The text states that all daily site activities will be recorded on a daily report form that is shown as Figure 7-2. However, Figure 7-2 is not included in the work plan. Figure 7-2 should be included in the work plan.

Table 7-1. The schedule in Table 7-1 does not include a time frame for a Phase II investigation that may include monitoring well installation and groundwater sampling. Table 7-1 should be revised to include a time frame for groundwater sampling as part of a Phase I or II investigation.

Section 8.0, Page 64, Paragraph 1. The public involvement plan does not include any information on public notices that will be issued or public meetings that will be held during key points in the RFI process. Also, the plan does not explain the mechanism that will be used to distribute fact sheets to the public. The text should be revised to include information

on the public notices that will be issued and the public meetings that will be held during key points in the RFI process. Also, the text should be revised to include the mechanism that will be used for distributing fact sheets to the public.

Section 9.1, Page 67, Bullet 1. The text states "Information will be provided on the nature and horizontal and vertical extent." The text should state that information will be provided on the nature and horizontal and vertical extent of contamination to soil, groundwater, surface water, sediment, and air from the facility. Also, the text should discuss the potential impact to all receptors. The text should be revised accordingly.

ENCLOSURE 3

**TECHNICAL REVIEW COMMENTS ON THE
QUALITY ASSURANCE PROJECT PLAN FOR THE
RCRA FACILITY INVESTIGATION AT THE
CWM-VICKERY FACILITY**

(25 Pages)

**TECHNICAL REVIEW COMMENTS ON THE
QUALITY ASSURANCE PROJECT PLAN FOR THE
RCRA FACILITY INVESTIGATION
AT THE CWM-VICKERY FACILITY**

PRC Environmental Management, Inc. (PRC), reviewed the quality assurance project plan (QAPP) for the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) at the Chemical Waste Management (CWM) facility in Vickery, Ohio, (CWM-Vickery). The QAPP was prepared by CWM-Vickery's consultant, Rust Environment & Infrastructure, Inc. (Rust), and was submitted to the U.S. Environmental Protection Agency (EPA) Region 5 in April 1995.

The QAPP contains extensive deficiencies, inaccuracies, and inconsistencies. Because these deficiencies, inaccuracies, and inconsistencies are so extensive, only examples of these issues are presented in the general and specific review comments provided below. These examples should not be considered the only portions of the QAPP that need revision. The QAPP should be thoroughly revised in accordance with the EPA Region 5 Model RCRA QAPP (Model QAPP) dated May 1993. The QAPP should be revised to be a stand-alone, project-specific document, except that the field sampling plan (FSP) may be used to present sampling procedures (see Section 4 of the Model QAPP). In addition to the Model QAPP and FSP, EPA's comments that were discussed during the pre-QAPP meeting on January 17, 1995, were used to evaluate the adequacy of the QAPP.

GÉNÉRAL COMMENTS

1. The project objectives presented in Section 1 of the QAPP do not contain sufficient details. Because of this, it is difficult to evaluate the adequacy of the proposed sampling and analysis program. Individual project objectives should be presented for each solid waste management unit (SWMU) group and area of concern (AOC). These objectives should clearly identify each sample matrix to be investigated, field parameters, laboratory parameters, specific action levels to which results will be compared and actions to be taken based on these comparisons.
2. Section 1 of the QAPP proposes collecting only soil and sediment samples and does not provide adequate rationale for not collecting groundwater samples. This approach seems to be inadequate for accomplishing the overall project objectives of verifying and further defining the nature and extent of contamination, as stated in Section 1 of the QAPP. As discussed during the

pre-QAPP meeting, the QAPP must state whether it is an objective to determine the extent of the groundwater plume or to merely confirm the existence of the plume. In either case, the QAPP should be revised to include groundwater sampling or to thoroughly explain how the project objectives will be accomplished without collecting groundwater samples.

3. The QAPP does not clearly or logically describe the proposed phased approach to the RFI. Although Section 1.1.2 briefly describes proposed Phase II activities, this phase is not specifically addressed in other sections of the QAPP. For example, it is not clear whether the sampling and analytical quality control (QC) procedures described in the QAPP apply to all RFI phases or just to Phase I. The revised QAPP should clearly describe and justify the respective QAPP elements that apply to each phase of the RFI, and should further explain whether a separate QAPP will be submitted for Phase II or if the QAPP under review is applicable to both phases.

In addition, Section 1.1.2, page 3 of 14, paragraph 3 states that additional RFI Phase II activities may include installing additional monitoring wells and conducting a detailed groundwater investigation. It appears that the need for collecting additional groundwater data during Phase II will be based on a review of existing groundwater data gathered during Phase I. However, reviewing existing data is not a field activity that is covered by a QAPP. Existing data should be reviewed before Phase I activities to determine whether additional groundwater data should be collected during Phase I. This determination should be discussed in the QAPP.

The QAPP also includes treatability studies and pilot testing as possible Phase II activities. However, these activities typically provide data that is used for corrective measures and is typically beyond the scope of an RFI.

4. The QAPP does not clearly explain the intended use of RFI data. For example, Section 1.4.2, page 12 of 14, paragraph 2 indicates that "data shall be compared to background soil levels, or to measured detection limits and other (low level) health based criteria." However, the QAPP does not quantitatively identify detection limits, background soil levels, and other low-level, health-based criteria. These action levels should be identified for each target analyte and sample medium. The revised QAPP should describe the process used to determine background soil levels and should reference the source of any "health based criteria" that will be used for this

RFI. This information should be provided to demonstrate that background soil levels will represent appropriate action levels for this project. The QAPP should also specify how comparisons of RFI data with all action levels will affect decisions regarding future corrective actions at specific SWMUs and AOCs.

The intended use of existing groundwater data is not addressed. As discussed during the pre-QAPP meeting, after existing groundwater data is validated, its intended use must be addressed. In particular, the QAPP should quantitatively identify groundwater action levels and compare existing groundwater data with these action levels. If existing groundwater data is inadequate for determining corrective actions, then the revised QAPP should describe in detail how and where additional groundwater data will be collected.

In addition, the QAPP should demonstrate that the data quality will be sufficient for the data's intended use. To demonstrate this, the QAPP should show that the type and amount of QC (such as reporting limits, QC check samples, control limits, and data deliverables) applied to groundwater and soil data will be adequate for the intended use of the data. For example, a greater amount of QC should be applied to data collected for risk assessment purposes than to data collected for screening purposes.

5. The QAPP proposes to use existing data along with data generated during the RFI to make decisions about further corrective actions at the facility. For example, Section 1.1.2, page 3 of 14, paragraph 2 states that Phase I RFI data will be evaluated in conjunction with existing data to determine whether additional investigation is necessary. However, the QAPP contains no quantitative summary of the existing data. The QAPP should include a summary of existing data and a discussion of the level of QC associated with data collection. Moreover, CWM-Vickery should demonstrate that the level of QC associated with any existing data that will be used for corrective action decisionmaking is equivalent to the level of QC associated with the data that will be generated during the RFI.
6. The Model QAPP provides generic language, but clearly states that generic language should be deleted and replaced with pertinent, site-specific information. The CWM-Vickery QAPP includes large sections of generic language that is taken verbatim from the Model QAPP. However, much of this generic verbatim text is not applicable to the CWM-Vickery RFI.

Examples of inapplicable generic text that is used in the CWM-Vickery QAPP include the following:

- Table of Contents. The header listed in the table of contents of the CWM-Vickery QAPP labels the document as the "Region 5 Model QA Project Plan" dated May 1993.
- Section 1.4, Page 11 of 14, Paragraph 1. Generic language copied in this paragraph refers to "RI/FS activities," but the CWM-Vickery QAPP is for RFI activities.
- Section 1.5.2, Page 13 of 14, Paragraph 4. This entire paragraph is copied verbatim from the Model QAPP and states that maps showing surface water sampling locations and locations of monitoring and residential wells to be sampled are included in the QAPP. However, surface water and groundwater from monitoring wells and residential wells are not matrices that are to be sampled during the CWM-Vickery RFI.
- Section 3.6, Page 5 of 5, Paragraph 1. Generic language copied in this paragraph discusses collection of aqueous matrix spike and matrix spike duplicate (MS/MSD) samples, but no aqueous samples are proposed to be collected for the RFI.
- Section 6.2, Page 2 of 2, Paragraph 1. The text refers to the "Appendix to this Model QAPjP."
- In several locations throughout the document, generic language that is copied verbatim from the Model QAPP refers to standard operating procedures (SOP) and their contents. The appendix to the CWM-Vickery QAPP does not include SOPs, but instead includes site-specific practices (SSP). The text should be revised to use consistent terminology.

7. Many SOPs consist of photocopies of specific SW-846 Methods such as Methods 8080A, 8270A, 8260A, and 6010A, and the 7000 series for metals. As stated in item 3 of the “Dos and Don’ts to Facilitate QAPP Approval” of the Model QAPP, this practice is not acceptable. The QAPP should include text that details sample preparation and analysis SOPs demonstrating how CWM Riverdale National Laboratory will implement each project-specific method. These SOPs should contain all 14 elements listed in the Model QAPP, “Guideline for the Preparation of Standard Operating Procedures.” These elements include method detection limits and precision and accuracy control limits that CWM Riverdale National Laboratory is capable of achieving for each project-specific parameter and sample medium.

In addition, the SSPs do not include all of the information referred to in the text when a reference to an SOP is made. In particular, the following references to SOPs and their contents were specified in the CWM-Vickery QAPP based on generic text that was copied verbatim from the Model QAPP, but the referenced information was not included in the SSPs:

- Section 3.1.3, Page 1 of 5. Precision control limits
- Section 3.2.3, Page 2 of 5. Accuracy control limits
- Section 6.2, Page 2 of 2. Calibration procedures, calibration frequency, acceptance criteria, and the conditions that will require recalibration
- Section 7.1, Page 1 of 1. Sample preparation, cleanup, and analysis
- Section 8.1, Page 1 of 2. Minimum laboratory QC requirements
- Section 11.1, Page 1 of 1, Paragraph 1. This paragraph states verbatim from the Model QAPP that field equipment for this project includes thermometers, pH meters, and conductivity meters, and later lists spare parts needed for these instruments; however, the only field equipment discussed in the FSP and elsewhere in the QAPP is a photoionization detector (PID).

- Section 13.2, Page 3 of 3. Conditions that automatically trigger corrective actions or optional procedures
8. As specified in the Model QAPP, Revision 0 should be identified on the title page and on each page header throughout the document.

SPECIFIC COMMENTS

The comments provided below refer to specific sections of the QAPP. Referenced sections of the QAPP are identified by section, page, paragraph, and line number, as appropriate. When paragraphs are cited, the first complete paragraph on a page is designated as "Paragraph 1." If comments are made on a paragraph that carries over from a previous page, the incomplete paragraph is designated as "Paragraph 0." When line numbers are cited, they refer to the line numbers of the paragraph cited.

1. **Title and Approval Page.** To comply with the requirements of the Model QAPP, this page should include the names of all individuals who will approve the QAPP, such as the Rust project manager and quality assurance (QA) officer and the CWM Riverdale National Laboratory QA manager. In addition, all dated signatures should be present except for those of EPA personnel.
2. **Table of Contents.** The list of appendixes at the end of the table of contents should identify the contents found in the appendix (for example, titles of individual SOPs contained in the appendixes). Following the list of appendixes, a list of tables or figures should be presented. After these lists, a complete list of recipients of the QAPP should be provided.
3. **Section 1.1.1, Page 2 of 14, Paragraph 2, Bullets 1 and 2.** The project objectives state that data will be compared to state and federal regulatory criteria and provide examples of criteria that may be used to conduct the comparison. However, specific criteria for individual parameters are not provided. The objectives should refer to a table that provides action levels for each target parameter.
4. **Section 1.1.1, Page 2 of 14, Paragraph 2, Bullet 1.** This bullet states that an objective of data collection will be to "verify and further define the nature and extent of contamination in

previously identified on-site and off-site areas." However, the QAPP and FSP do not discuss any off-site sampling activities. This objective should be revised accordingly.

5. **Section 1.1.1, Page 2 of 14, Paragraph 2, Bullet 2.** This bullet states that one of the objectives of data collection is to determine the nature and extent of contamination in previously uninvestigated areas. However, it is not clear where these areas are located in relation to areas that have been investigated. The revised QAPP should include a figure that (1) identifies and distinguishes areas that were previously investigated from areas that were not, and (2) shows the locations of all SWMUs and AOCs within these areas.
6. **Section 1.1.2, Page 3 of 14, Paragraph 0, Bullet 1.** This bullet states that surface soil samples will be collected from depths of 0 to 18 inches, but the FSP states that surface soil samples will be collected from depths of 0 to 2 feet. This discrepancy should be resolved and the text revised accordingly.
7. **Section 1.1.2, Page 3 of 14, Paragraph 1.** This paragraph refers to "a limited number of samples" that will be analyzed for soil physical parameters. The exact number of samples to be analyzed for these parameters and the criteria used for selecting samples for these analyses are not discussed further in the QAPP or in the FSP. The text should be revised to include this information.
8. **Section 1.1.2, Page 3 of 14, Paragraph 2.** This paragraph states that Phase I data will be evaluated qualitatively and statistically in conjunction with existing data to determine the need for additional investigation. This paragraph should include details on what statistical procedures will be used to evaluate data and what results will trigger the need for additional investigation. Also, the text should state that data will be evaluated "quantitatively" rather than "qualitatively."
9. **Section 1.2.1, Page 4 of 14, Paragraph 3.** This section briefly discusses the location of the CWM-Vickery facility. The Model QAPP calls for further information that was not presented, including the location of streets, rivers, and property bordering the facility, as well as the proximity of nearby large cities. This information should be provided; or, if it is provided in the RFI Work Plan, the specific section of the work plan should be referenced.

10. **Section 1.3.1, Pages 5 and 6 of 14.** This section discusses the general history of the CWM-Vickery facility and refers to approvals granted to inject waste into subsurface wells and to construct a Toxic Substances Control Act (TSCA) closure cell. The text should specify the agency that granted these approvals and should include the date when the approval was granted.

This section refers to site features including injection wells and surface impoundments. A site layout figure that shows the locations of these features should accompany this section.

This section discusses the disposal of wastes in injection wells, surface impoundments, and a TSCA closure cell, and the closure of surface impoundments. This section should also discuss the types of wastes previously disposed of and the cleanup levels applied during closure of the surface impoundments.

11. **Section 1.3.1, Page 6 of 14, Paragraphs 1 and 3.** Paragraph 1 states that all of the 12 surface impoundments were closed between 1979 and 1992. However, paragraph 3 specifies that the Ohio Environmental Protection Agency (OEPA) certified five surface impoundments to be clean-closed. The revised QAPP should include the dates of closure of the other seven surface impoundments and whether OEPA approved the closures.
12. **Section 1.3.1, Page 6 of 14, Paragraph 2.** This paragraph states that landfarming activities and operation of an oil recovery facility were used to treat, store, and dispose of wastes. This paragraph should also discuss whether these units were permitted. If so, the agency granting the permit, the permit number, and the date when the permit was issued should be provided. If these units have been closed, this paragraph should discuss the closure and whether it was approved.
13. **Section 1.3.2.1, Page 7 of 14, Paragraph 1.** This paragraph refers to a permit issued in December 1981. The text should state whether this is a RCRA Part B or other permit.
14. **Section 1.3.2.1, Page 7 of 14, Paragraph 2.** The text states that “most of the parameters” were found to be below federal drinking water standards during a statistical analysis of groundwater quality data. The text should state specifically for what parameters analyses were performed.

15. **Section 1.3.2.2, Page 8 of 14, Paragraph 0.** This paragraph states that the results of additional and continuing studies from a 1983 geological review were to be presented when they were available. Due to the amount of time that has elapsed since the 1983 review, these results should be available and should be briefly discussed in text. Documents containing the complete results should also be referenced. If results are still unavailable, this should be stated clearly and the reason the results are not available should be explained.
16. **Section 1.3.2.3.** This section presents a summary of hydrogeological conditions; however, the information presented is inconsistent or deficient in some places. Examples of such inconsistencies and deficiencies include the following:
- Bullet 1 states that the site is underlain by 40 to 50 feet of lacustrine clay and glacial till overburden. Bullet 3 states that the “confined aquifer and potentiometric surface is about 10 ft. to 15 ft. below ground surface.” These statements present conflicting information regarding the depth of the confined aquifer.
 - Bullet 3 states that the water table in the overburden “is close” to the ground surface and that the overburden has a “very low” hydraulic conductivity. Both the depth to the water table and the hydraulic conductivity should be quantified.

These inconsistencies and deficiencies in the text should be resolved. In addition, a cross-sectional drawing should be provided to further clarify the site hydrogeology.

17. **Section 1.3.2.3, Page 9 of 14, Paragraph 1.** This paragraph states that the groundwater flow in the overburden is “generally downward.” Text on the previous page states that the overburden is generally 40 to 50 feet thick and that the water table in the overburden is close to the ground surface; therefore, it seems likely that the groundwater in the overburden would have a horizontal component to its flow direction. This horizontal direction should be stated or its absence should be further explained.
18. **Section 1.3.3, Pages 9 and 10 of 14.** The introductory paragraph to this section states that it will discuss target compounds; however, no target compounds are specifically identified. In

particular, “a VOC” is referred to in paragraph 2 on page 10, and “hazardous waste” and “waste pile leachate” are referred to in paragraph 3 on page 10. The specific volatile organic compounds (VOC) and the hazardous constituents in the waste and leachate should be stated.

19. **Section 1.3.3, Page 9 of 14, Paragraph 2, Bullet 1.** This paragraph discusses releases of liquid wastes to soil and groundwater and states that the releases had little effect on the groundwater because of the low permeability of the clay soil and because many of the releases were immediately treated with lime and the contaminated soil was removed. The rationale for stating that the releases had little effect on soil is not adequately supported by data. The permeability of the soil should be stated quantitatively, and other data, such as rainfall data and the results of confirmatory sampling, should be provided.
20. **Section 1.3.3, Page 10 of 14, Paragraph 0, Bullet 2.** This paragraph discusses several large releases of liquid hazardous waste to both Little Raccoon Creek and Meyers Ditch and refers to "other releases" to surface water. The text also recommends analyzing stream bed sediments to characterize this medium. Although collecting one sample from Meyers Ditch is specified in the FSP, collecting samples of Little Raccoon Creek sediment is not specified in the QAPP or the FSP. The QAPP states that "subsequent testing of the creek [Little Raccoon Creek] water showed little contamination present." However, this statement implies that a water sample was collected but a sediment sample was not collected. Further, the action levels to which the data were compared are not provided. The QAPP should provide further information to justify why a sediment sample was not collected from Little Raccoon Creek; otherwise, this should be specified as a sampling location in the FSP. In addition, the name of the surface water body that received the "other releases" should also be specified, and, if other than Meyers Ditch or Little Raccoon Creek, sampling of this surface water body should also be specified.
21. **Section 1.4, Page 11 of 14, Paragraph 5.** This paragraph states that soil and sediment samples will be collected “at several of the SWMUs and all of the AOCs.” These SWMUs and AOCs should either be listed in the text or the text should reference Table 5 of the QAPP. In addition, the FSP should be referenced for more information on the SWMUs comprising each SWMU group and the AOCs.

This paragraph also states that sediment and soil samples will be analyzed for target compound list (TCL) and target analyte list (TAL) compounds using appropriate EPA methods, and that the list of compounds is included in Tables 1 through 4 in Appendix A. However, these tables are not found in Appendix A. The individual analytes, their method detection limits (MDL), and the corresponding EPA analytical methods and laboratory-specific SOPs should be provided in the appendix. The rationale for including these analytes as parameters for this project should also be provided.

22. **Section 1.4.2.1, Page 12 of 14.** This table in this section identifies the field parameter as “quantitative screening with photoionization detector,” but does not indicate the parameter that will be measured by the PID. This section should state that the PID will measure organic vapors. In addition, Table 5 in Appendix A of the QAPP states that the PID will be used for qualitative screening of soil samples. The PID measures organic vapors but does not provide a direct quantitative measurement of individual VOC concentrations in soils. Therefore, the text should be revised so that it is consistent with Table 5 in Appendix A, which correctly states that the PID will be used for qualitative screening of soil samples.
23. **Sections 1.4.2.1 and 1.4.2.2, Page 12 of 14.** Both of these sections list soil as the only sample matrix, but sediment is discussed as another sample matrix on the preceding page of the QAPP and in the FSP. Although these are considered to be the same medium for analytical purposes in the laboratory, they are distinct sample matrices for the RFI. Therefore, sediment should be included as a separate sample matrix in these sections.
24. **Section 1.4.2.2, Page 12 of 14.** Pesticides and polychlorinated biphenyls (PCB) are not included in the list of parameters in this section. However, paragraph 1 on page 3 of 14, Section 1.1.2, states that samples will be analyzed for pesticides and PCBs among other analytes; and Table 5 of Appendix A includes pesticides and PCBs as a laboratory parameter. In addition, Section 1.1.1 includes TSCA rules for PCBs as an example of pertinent federal regulatory criteria, and Section 1.3.1 discusses a TSCA closure cell located at the site. Lastly, Appendix A includes an analytical method for pesticides and PCBs. Therefore, this section should include pesticides and PCBs as laboratory parameters or their omission should be explained.

25. **Section 1.4.3, Page 13 of 14, Paragraph 1.** This section states that analytical data quality level 3 will be used for this project. As stated during the pre-QAPP meeting in January 1995, all references to data quality objective (DQO) levels should be deleted because EPA has determined that they are no longer relevant.

This paragraph also states that the main purpose of data collection is to determine the existence of contamination that remains from past releases on site. However, Section 1.4.1 states that a confirmational level of data quality is needed for the purpose of risk assessment, evaluation of remedial alternatives, and establishment of cleanup levels. The last statement is more consistent with the purpose of the RFI stated in Section 1.1.1. All references to analytical data quality and data purposes should be revised to be consistent.

26. **Section 1.5.2, Page 13 of 14, Paragraph 4.** This paragraph states that some of the proposed sampling locations could be changed depending on the nature of encountered field conditions. The text should be revised to provide examples of such conditions.

27. **Section 1.6.1, Page 14 of 14, Paragraph 2.** This paragraph provides dates during which field activities are scheduled to begin. The text should reflect that the beginning of field activities is contingent upon EPA approval of the RFI work plan. This section also refers to a task bar chart that was submitted with the QAPP; however, this figure was not included in the QAPP. This figure should be provided.

28. **Section 2.0.** This section presents key project personnel. However, this section discusses these personnel by title only and does not provide the names of the individuals. In addition, the text uses the pronouns "he/she" and "his/her" when referring to personnel. The individuals who will fill each key project position should have been determined; therefore, the names of key project personnel should be presented in the text of this section and only the correct pronouns should be used.

29. **Section 2.1, Page 1 of 7, Paragraph 2.** This paragraph refers to an organization chart that is "in Section 5.0 of Figure 7-1 of the RFI Work Plan"; however, this figure was not included in Section 5.0 or any other section of the RFI. An organization chart that includes the names of and

lines of authority between key project personnel should be included in Section 2.1 of the revised QAPP.

30. **Section 2.2, Page 1 of 7, Paragraph 4.** This section states that the CWM-Vickery project manager will report directly to the EPA Region 5 RCRA Permit Writer (RPW)/RCRA Project Coordinator (RPC)/State Project Manager. This text is taken verbatim from the Model QAPP. If the CWM-Vickery manager will in fact report directly to the state project manager, then the state project manager's roles and responsibilities should be discussed; otherwise, reference to the state project manager should be deleted.
31. **Section 2.4, Page 4 of 7, Paragraph 2, Bullet 4.** This bullet states that the CWM Riverdale National Laboratory QA officer will determine whether to implement laboratory corrective actions. The text should clarify whether the QA officer is also responsible for formally approving corrective actions.
32. **Section 2.4, Page 4 of 7, Paragraph 2, Bullet 7.** This bullet states that the laboratory's QA officer is responsible for signing the title page of the QAPP. Signing the title page indicates that the signee approves of the QAPP; therefore, the text should also mention that the laboratory QA officer is responsible for approving the QAPP.
33. **Section 2.5, Page 6 of 7, Paragraph 1; and Page 7 of 7, Paragraph 1.** These paragraphs discuss the responsibilities of the on-site laboratory manager and lab staff. The headings to these paragraphs end with the phrase "[if applicable]" as shown in the Model QAPP. It should already be established whether an on-site laboratory will be used. Based on the laboratory parameters to be analyzed for, it does not seem likely that an on-site laboratory will be used. If this is the case, then these paragraphs should be deleted along with the reference to field laboratory staff in the first bullet at the top of page 6 of 7. If, however, an on-site laboratory will be used, the phrase "[if applicable]" should be deleted from the headings to these paragraphs and the text should state the laboratory parameters that will be analyzed for at the on-site laboratory.
34. **Section 3.0.** This section, which discusses QA objectives, does not provide a project-specific description of QA objectives. As noted in the general comments, this section also contains extensive generic text from the Model QAPP. In addition, QA objectives for sediment samples

are not discussed in Section 3.0. This section should provide QA objectives for all project-specific field and laboratory target parameters and sample matrices.

35. **Section 3.1.2, Page 1 of 5, Paragraph 3.** This paragraph states that field duplicates will be collected at a frequency of one duplicate per 10 analytical samples. However, the FSP states that the frequency of collecting field duplicates will be one for every 20 analytical samples. This discrepancy should be resolved and the text should be revised accordingly.
36. **Section 3.1.2, Page 1 of 5, Paragraph 3; and Section 3.2.2, Page 2 of 5, Paragraph 2.** These sections discuss field precision and accuracy through the collection and measurement of QA/QC samples to be analyzed in the laboratory. These sections should also discuss the assessment of precision and accuracy for field screening instruments, such as the PID.
37. **Section 3.1.3, Page 1 of 5, Paragraph 4.** This paragraph states verbatim from the Model QAPP that precision in the laboratory will be assessed through the calculation of relative percent difference (RPD) and relative standard deviation (RSD) for three or more replicate samples. The text should state the specific laboratory parameters for which RPD will be used and for which RSD will be used to assess precision. If RSD is not being used, then the number of replicate samples should be changed from three or more to two because RPD requires only two replicate samples.
38. **Section 3.1.3, Page 1 of 5, Paragraph 4; and Section 3.2.3, Page 2 of 5, Paragraph 3.** These paragraphs state that precision and accuracy control limits are provided in Appendix A. However, Appendix A contains only general information on precision and accuracy control limits in the form of photocopied pages from SW-846. Project-specific precision and accuracy control limits for each target analyte should be clearly identified in these sections.
39. **Section 3.2.2, Page 2 of 5, Paragraph 3.** This paragraph states that accuracy in the field is assessed through the use of field and trip blanks. These blanks are aqueous samples that are not typically used to assess accuracy of soil sample collection due to the incomparability of the different matrices. This discussion of field and trip blanks should either be deleted or their applicability to soil samples should be explained. If deleted, the discussion of field and trip blanks in Section 3.6 should also be deleted.

40. **Section 3.2.3.** This section states that laboratory accuracy will be assessed through analysis of matrix spike (MS) samples or standard reference materials (SRM). The QAPP should specify which analyses will use MSs and which analyses will use SRMs.
41. **Section 3.3.** This section defines both field and laboratory completeness as "the number of valid measurements obtained from all measurements taken during the project." This definition is incorrect in both instances and should be revised to state that field and laboratory completeness is the number of valid measurements obtained from all measurements planned to be taken in the field and laboratory, respectively.
42. **Section 3.3.2, Page 2 of 5, Paragraph 5.** This section states that field completeness is the amount of valid measurements obtained from all measurements taken in the project and refers to a formula for completeness that is presented in Section 12 of the QAPP. The numerator of this formula represents the "number of valid measurements." The text should explain what criteria will be used to determine the validity of a field measurement.
43. **Sections 3.3.2 and 3.3.3, Pages 2 and 3 of 5.** These sections provide total field and laboratory completeness objectives of 90 and 95 percent, respectively. This approach could result in incomplete data for a particular SWMU or AOC. Therefore, individual completeness objectives should be established for each SWMU and AOC. Also, a sufficient number of samples should be collected to make completeness a meaningful parameter. For example, for SWMU Group E, the FSP indicates that a total of three samples will be collected. If only two of the three sample results were valid, the completeness would be only 67 percent, and the objective would not be met. Therefore, the completeness objective should be modified, or the number of samples to be collected should be increased. The QAPP should be revised to reflect this requirement.
44. **Section 3.4.3, Page 3 of 5, Paragraph 3, Lines 1 and 2.** These lines state that representativeness in the laboratory will be ensured by analyzing and assessing field duplicate samples. The QAPP should explain how analytical results for field duplicates, which are generally used to assess the combined precision of sampling and analyses, can be used to assess the representativeness of data generated in the laboratory.

45. **Section 3.6, Page 5 of 5, Paragraph 3.** This paragraph states that the numbers of duplicate and field blank samples to be collected are listed in the FSP. However, the numbers of these samples to be collected are not listed in the FSP. The FSP does not discuss field blanks and only provides the sampling frequency for field duplicates. The QAPP and the FSP should be revised so these documents are consistent and the numbers of duplicate and field blank samples are clearly presented.
46. **Section 4.0.** This section lists in bulleted format the types of information that can be found in the FSP. In accordance with the Model QAPP, each bullet should provide the subsection of the FSP where the information can be found.
47. **Section 4.0, Page 1 of 1, Bullet 2.** This bullet indicates that obtaining contaminant-free sample containers is discussed in the FSP. However, the discussion in the FSP lacks specific information required by the Model QAPP. The FSP should include the following information: detailed procedures used to prepare contaminant-free sample containers, the criteria that the containers must meet, how the criteria are verified, and the frequency of verification.
48. **Section 4.0, Page 1 of 1, Bullet 8.** This bullet indicates that sampling equipment decontamination procedures are discussed in the FSP. However, the only discussion of decontamination in the FSP pertains to the decontamination area and does not adequately address procedures to be used to decontaminate sampling equipment. The text should be revised to discuss the procedures for decontaminating sampling equipment.
49. **Section 4.0, Page 1 of 1, Bullets 12 and 13.** These bullets indicate that the FSP discusses the soil sampling order and the sediment sampling order. The Model QAPP explains that the sampling order is the order of "analytical parameter sample fraction collection." The FSP states that only sample fractions will typically be collected from the most sensitive to least sensitive parameters. The FSP should state the order in which samples for specific analytes will be collected.
50. **Section 5.1, Page 2 of 5, Paragraph 4.** This paragraph discusses field custody procedures and refers to a chain-of-custody record and a chain-of-custody form. The text should reference Figure 5-1 of the FSP, which shows a chain-of-custody record form.

51. **Section 5.1, Page 3 of 5, Item e, Lines 1 and 2.** The text states that samples will be dispatched to the appropriate laboratory for analysis. This statement should be clarified by identifying CWM Riverdale National Laboratory as the appropriate laboratory.
52. **Section 5.1, Page 3 of 5, Item e, Lines 5 and 6.** These lines state that custody seals will be attached to the cooler. These lines should also state that the field team leader or a designee will sign the custody seals before they are attached to the cooler.
53. **Section 5.2, Page 4 of 5, Paragraph 1.** This paragraph states that laboratory custody procedures are provided in CWM Riverdale National Laboratory procedures (in Appendix A) and in following sections, but they are only provided in Appendix A. The reference to following sections should be deleted from the text.
54. **Section 5.3, Page 4 of 5, Paragraph 2.** This paragraph discusses the final evidence files, but does not specify the length of time during which files will be maintained. According to the Model QAPP, the length of time during which the files will be maintained should be specified in this section.
55. **Section 6.0.** This section, which discusses calibration procedures, should include a table similar to Table 6 in the Model QAPP. The table should summarize calibration standards and frequency, acceptance criteria, and corrective actions for each field and laboratory measurement and for each sample matrix.
56. **Section 6.2, Page 2 of 2, Paragraph 1.** For calibration procedures and analytical methods, this paragraph refers to “method Nos. 92-02, 8080A, 8150A, 8270A, 8260 for organic compounds analysis and method Nos. 6010A, 7740, 7060A, 7471A, 7841, 7421 for metals analysis.” The following comments pertain to this statement.
- Except for CWM method 92-02, these methods are all SW-846 methods. According to the Model QAPP, laboratory-specific SOPs are required for all analyses and should be included in the appendixes to the QAPP (see general comment 7). This section should reference these SOPs and discuss any deviations from the SOPs that may occur during the CWM-Vickery RFI.

- Any references to EPA SW-846 methods should be clearly identified as such to differentiate them from CWM methods and SOPs.
- The text should present the laboratory parameters analyzed for by each SOP and corresponding EPA methods.
- EPA SW-846 methods 8150A, 8270A, and 8260 have been updated to methods 8150B, 8270B, and 8260A, respectively, in SW-846 Update II promulgated in September 1994. These updated methods should be referred to in this QAPP and employed by the CWM Riverdale National Laboratory.

57. **Section 7.0.** This section is deficient because it lacks project-specific information specified in the Model QAPP. The following comments and the bulleted comments in specific comment 60 apply to Section 7.0:

- The text of this section should state all analytical parameters; the corresponding laboratory-specific SOPs for sample preparation, sample analyses, and confirmatory analysis (if applicable); and the approved EPA methods upon which the SOPs are based. This information should be summarized in tables similar to the example tables provided in Section 7 of the Model QAPP.
- The text should provide a brief explanation of how the method validation study, including the detection limit study, was conducted, and should reference a QAPP appendix for documentation of the study.
- The text should reference the appropriate QAPP section for quantities and types of QC samples to be collected for each analyte group.

58. **Section 8.0.** To clarify the proposed QC program, this section, which discusses internal QC checks, should include a table summarizing the types, frequencies, acceptance criteria, and corrective actions associated with all QC checks for each analysis and sample matrix.

59. **Section 8.1, Page 2 of 2, Paragraph 0.** This paragraph states that any samples that are analyzed and are found to be in nonconformance with the QC criteria will be reanalyzed by the laboratory if sufficient volume is available. The text should also state that reanalysis will only occur if sample holding times are not exceeded.
60. **Section 9.1, Page 1 of 5, Paragraph 2.** This paragraph refers to results forms for field data; however, examples of these forms are not provided. Examples of these forms should be included in the revised QAPP or the FSP.

This paragraph states that the field manager is identified “in Section 5.0 of the RFI Work Plan at Figure 7-1.” However, this figure was not found and the field manager was not identified in the RFI work plan. This individual should be identified and the missing figure should be provided. In addition, a field team leader is discussed in Section 2, but a field manager is not discussed. If these positions refer to the same job title, consistent terms should be used in Sections 2.0 and 9.0. If these job titles represent different individuals, then the field manager's responsibilities should either be discussed in Section 2.0 or not be included in Figure 7-1.

61. **Section 9.1.1, Page 1 of 5, Paragraph 2.** This paragraph states verbatim from the Model QAPP that a mobile gas chromatograph (GC) will not be used until a later phase of the study. The potential Phase II activities highlighted in Section 1.1.2 do not specifically reference a mobile GC. The purpose of the mobile GC should be clearly stated in the revised QAPP or the reference to the GC should be deleted from this section.
62. **Section 9.2.1, Page 2 of 5.** This section discusses procedures used to evaluate field data; however, checking calibration of the PID used to generate field data and the quantity of field data that will be evaluated are not addressed. This section should discuss checking PID calibration and performing other QC checks as part of field data validation. This section should also state that 100 percent of the field data will be validated.
63. **Section 9.2.2, Page 3 of 5, Paragraph 1.** This paragraph references EPA guidelines for reviewing organic data. The review and validation of inorganic data should also be addressed because metals were identified as laboratory parameters in Section 1.4.2.2. This paragraph also

states that the results of all QC checks for VOCs shall be validated by the data validator. The name of individuals performing data validation should be identified.

64. **Section 9.3.1, Page 3 of 5.** This section refers to report sheets for field data reporting. Examples of these report sheets should be included in the QAPP or FSP.
65. **Section 10.1.1.1, Page 1 of 3, Paragraph 2.** This paragraph states that the QA officer will perform internal field audits. The text should identify whether the individual referred to is the CWM-Vickery QA Officer or the Rust QA Officer.
66. **Section 10.1.1.3, Page 1 of 3.** This section, which discusses internal field audit procedures, should specify that EPA will be notified immediately of all nonconformances with the QAPP and FSP that affect data quality and that such notifications will be made before corrective actions are implemented.
67. **Section 10.1.1.3, Page 2 of 3, Paragraph 0.** This paragraph states that the field audit checklist for this project is submitted with the QAPP; however, this checklist was not found in the QAPP. This checklist should be submitted and the text should be revised to state its location in the QAPP.
68. **Section 10.2.1.2, Page 2 of 3.** This section, which discusses the frequency of internal laboratory audits, states that system and performance audits will be performed on an annual and quarterly basis, respectively. Both a system and a performance audit should also be performed at the beginning of the Phase I RFI to ensure that any problems are identified and corrected early in the project. The revised QAPP should state that system and performance audits will be conducted during the first month of the RFI.
69. **Section 10.2.1.3, Page 3 of 3, Paragraph 1.** This paragraph states that the laboratory audit checklist for this project was submitted with the QAPP, but it was not found in the QAPP. This checklist should be submitted and the text should be revised to state its location in the QAPP.
70. **Section 11.2, Page 1 of 1, Paragraph 2.** This paragraph discusses laboratory instrument preventive maintenance. Tables similar to Tables 7 and 8 in the Model QAPP should be

provided to summarize the maintenance requirements and frequencies for key analytical instruments or equipment. These tables should also be referenced in this section.

71. **Section 12.0.** Sections 3.1.2 and 3.2.3 refer to this section for equations that will be used to calculate precision in terms of RSD and accuracy using SRM, respectively. However, the equations for these calculations are not provided in this section. If RSD and SRMs will be used to evaluate data for this project, then the equations that will be used to calculate RSD and accuracy using SRMs should be provided.
72. **Section 12.2, Page 1 of 2, Paragraph 2.** This paragraph states that spiked samples will be prepared by choosing a sample at random from each sample shipment received at the laboratory. However, Section 3.6 states that MS/MSDs will be designated and collected in the field. Therefore, the text should be revised to consistently state that samples to be spiked will be designated in the field.
73. **Section 13.3, Page 3 of 3, Paragraph 5.** This paragraph refers to the Rust data assessor, who is not identified in this section or in Sections 2.0 or 9.2.2. The text should be revised to identify this individual.
74. **Section 14.1, Page 1 of 2, Paragraph 3.** This paragraph states that QA reports can be made by telephone to the appropriate individuals when corrective action needs to be implemented immediately. The text should also state that the EPA RPW/RPC will be one of the individuals who is notified.
75. **Section 14.3, Page 2 of 2, Paragraph 5.** This paragraph refers to a project organization chart that was not provided (see specific comment 29). A project organization chart should be provided.

The following specific deficiencies pertain to Appendix A:

76. The pages of the appendix are not in proper sequence. All pages of the appendix should be numbered and thoroughly checked to ensure that they are in the correct order upon submittal.

77. Appendix A contains several SOPs that do not apply to this project such as SSP No. 100-14 titled "Site Specific Practice for TC-86-02 Solvent Method for Incineration," and SSP No. 100-7 titled "Appendix 1 Site Specific Screen for TC-86-02 Solvent Screen." In addition, a photocopy of SW 846 Method 8150A for herbicide analyses is included, yet the QAPP does not identify herbicides as an analytical parameter. Appendix A should be thoroughly checked and all extraneous SOPs should be deleted.
78. Appendix A contains photocopies of SW 846 Method 6010A for metals analysis and photocopies of some 7000 Series Methods for thallium, arsenic, selenium, and lead. Because Methods 6010A and 7000 Series Methods are both applicable to these four metals, the QAPP must distinguish between when Methods 6010A and when 7000 Series Methods will be used.
79. SSP No. 92-02 titled "Solvents Analysis Using Gas Chromatography" does not identify detection limits, QC acceptance criteria, calibration acceptance criteria, and corrective action. In addition, Section 7.5 of this SSP states that a single point calibration will be used. However, Section 6.2 of the QAPP states that calibrations will consist of 3 to 5 points. This SSP should be revised to include the above information and to reflect the use of 3 to 5 point calibration procedures.
80. Table 5 in Appendix A summarizes the sampling and analysis program; however, this table does not include the sampling and analysis to be conducted at AOCs described in the FSP. AOC sampling and analysis requirements should be added to Table 5.
81. The first column of Table 5 has the heading "SWMU," but the sampling and analysis activities summarized in the table pertain to SWMU groups. After AOCs are added to the table, the heading for the first column should be changed to "SWMU Groups and AOCs." The sixth and seventh columns have the headings "matrix duplicate" and "matrix spike," respectively; however, Section 3.6 of the QAPP uses the term "field duplicates" and also states that matrix spikes will be referred to as "MS/MSD samples" because they are collected in duplicate. These column headings should be changed to correspond to the terminology used in Section 3.6.
82. In the field parameter column of Table 5, "qualitative screening with photoionization detector," is listed as the field parameter for all SWMU groups; however, this does not state a field

parameter. The entries in this column should be revised to also state that the PID measures organic vapors.

83. Table 5, which is subheaded "Field QA/QC Samples," indicates that samples in addition to investigative samples are required for "matrix spike" samples. However, Section 3.6 of the QAPP states that soil MS/MSD samples require no extra sample volume for VOCs or extractable organics, and Sections 12.1 and 12.2 state that spike samples are selected from sample shipments at the laboratory. If the table is to include only field samples, then either the "matrix spike" samples should be deleted from the table, or the text in Sections 3.6, 12.1, and 12.2 should be revised accordingly. If the table is to include QA/QC samples both collected in the field and prepared in the laboratory, then the table subheading should be revised to read "QA/QC Samples" and the samples listed in the table should be clearly identified as to whether they are collected in the field or prepared in the laboratory.
84. According to Table 5, the number of "matrix duplicate" and "matrix spike" samples to be collected for metals is greater than the number required for other laboratory parameters. However, Section 3.6 provides only one sampling frequency for field duplicates (1 every 10 investigative samples) and one sampling frequency for MS/MSD samples (1 every 20 investigative samples) for all laboratory parameters. Therefore, in Table 5, the number of "matrix duplicate" samples should be the same for all laboratory parameters, as should the number of "matrix spike" samples; otherwise, the text should discuss the reasons for proposing different QA/QC sampling frequencies for the different laboratory parameters. Table 5 also indicates that "matrix duplicate" and "matrix spike" samples have the same sampling frequency; however, these two distinct types of QA/QC samples have different sampling frequencies according to Section 3.6. The numbers in Table 5 should be consistent with the text in Section 3.6. It should also be noted that for a QA/QC sampling frequency of 1 every 10 investigative samples, a QA/QC sample should be collected for every 10 or fewer investigative samples which requires rounding-up the number of QA/QC samples for the remaining fraction of 10 investigative samples. For example, the 32 investigative samples to be collected at SWMU Group A require four, not three, matrix duplicate samples.
85. Table 5 provides four different values for the number of QA/QC samples to be collected for the four groups of laboratory parameters, but provides only one value for the number of investigative

samples to be collected for each SWMU group. Table 5 should present a consistent approach for both investigative and QA/QC samples as to whether one sample will be considered to include the total sample volume for all four laboratory parameter groups or whether these will be considered four distinct samples.

86. Table 5 lists 25 as the number of investigative samples to be collected for SWMU Group C; however, the FSP states that 26 samples will be collected for this SWMU group. This discrepancy should be resolved.
87. Table 5 states that trip, field, and "rinse" blanks are to be collected. "Rinsate" blanks, which are described in the FSP, are also aqueous samples. As previously stated in specific comment 43, aqueous trip and field blanks are typically not required for soil samples. Therefore, these samples should be deleted from Table 5. If, however, these samples are required due to atypical circumstances, these circumstances should be explained in the text and rinsate blanks should be added to the discussion of QA/QC samples in Section 3.6. Table 5 should also clearly identify the number of each type of blank to be collected instead of only showing the total of all three types of blanks.

MAR 03 1995

HRP-8J

CERTIFIED MAIL: P 707 061 559
RETURN RECEIPT REQUESTED

Fred G. Nicar, General Manager
Chemical Waste Management, Inc.
Vickery Facility
3956 State Route 412
Vickery, Ohio 43464

RE: Chemical Waste Management, Inc.
Vickery Facility (CWM-Vickery)
RCRA Facility Investigation (RFI)
Report on Current Conditions
OHD 020 273 819

Dear Mr. Nicar:

The United States Environmental Protection Agency (U.S. EPA) has reviewed CWM-Vickery's RFI Report on Current Conditions prepared by RUST Environment & Infrastructure for the Chemical Waste Management facility in Vickery, Ohio. In general, the report contains inconsistencies and lacks the detail necessary to support the conclusions made regarding potential releases from solid waste management units (SWMUs) and areas of concern (AOCs).

CWM-Vickery shall respond to these comments within 30 days after receipt of this letter. The modified RFI Report on Current Condition shall be prepared in accordance with the following editorial protocol or convention:

1. Old language is overstruck.
2. New language is capitalized.
3. Page headers must indicate date of submission.
4. If any significant changes are necessary, pages should be renumbered, table of contents revised, and complete sections provided as required.
5. An itemized list of all replacement pages, sections, tables, etc. that are to be replaced in the modified submission, shall be provided.

In addition to four copies of the modified submission required by the U.S. EPA, please send one copy of each to:

Edwin Lim	Chuck Hull	CWM-Vickery
Ohio EPA, DHWM	Ohio EPA, NWDO	Information Repository
P.O. Box 1049	347 N. Dunbridge Rd.	
1800 WaterMark Drive	Bowling Green, OH 43402	
Columbus, OH 43266-0149		

If you have questions please contact me at (312) 886-7569.

Sincerely,

Thomas Matheson
Corrective Action Project Manager
RCRA Permitting Branch

cc: Ed Lim, OEPA/CO
Chuck Hull, OEPA/NEDO

HRP-8J:MATHESON:twm:1/26/95:6-7596: F:\USER\TMATHESO\CWMVICK\CC_COM1.LTR

CONCURRENCE REQUESTED FROM RPB			
OTHER STAFF	RPB STAFF	OHIO SECTION CHIEF	RPB BRANCH CHIEF
3/1/95 PB	3/1/95 omy	3/1/95 JPC	

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5
COMMENTS ON THE CHEMICAL WASTE MANAGEMENT - VICKERY, INC.
RFI REPORT ON CURRENT CONDITIONS
DATED DECEMBER 1994**

The U.S. EPA reviewed the RFI Report on Current Conditions for the Chemical Waste Management facility in Vickery, Ohio. The report, dated December 1994, was prepared by RUST Environment & Infrastructure. Numerous deficiencies were discovered throughout the entire report, including inconsistencies, and incomplete information. Further clarification is needed to support the statements and conclusions made in the report regarding potential releases from solid waste management units (SWMUs) and areas of concern (AOCs). The U.S. EPA's general and specific review comments are provided below.

GENERAL COMMENTS

1. The text states in Section 1.1, page 1-1, paragraph 2, that the terms "pond", "impoundment", and "surface impoundment" will be used interchangeably throughout the report. One term should be chosen to describe the unit and should be used consistently.
2. Site-specific geological and hydrogeological information is presented in Section 3.0, which presents regional geologic and hydrogeologic information. Instead the site-specific information should be presented in Section 4.0, which includes site-specific information.
3. For each SWMU discussed in the report, the potential for contamination of the groundwater migration pathway is included. Several SWMU descriptions, such as SWMU 1, included a statement that briefly describes a groundwater monitoring system which is in place along with groundwater monitoring wells, and single sample holes adjacent to the unit. In addition, the text describes a closed unit investigation conducted in 1983 that determined no release to groundwater has been detected. For each SWMU as applicable, this statement should describe what composes the groundwater monitoring system in addition to the wells and should define what "single sample holes" means. In addition, the text should list the number and depths of upgradient and downgradient wells and their locations. If this information serves as a justification for stating that no groundwater release exists and therefore no further action is required for groundwater throughout the corrective action process, then this point needs to be stated more clearly.
4. Throughout the report, the terms "closure", "closed", "clean closed" and "contingent closure" are used. The text states these terms are not to be misinterpreted to mean the same as the regulatory term but the terms merely imply that a unit is out of service or inactive. For example, in Section 5.0, page 5-54, the text states SWMU 19 was closed in 1983. Another example, in Section 5.0, page 5-49, paragraph 1, SWMU 16 is described as being "contingent" closed. Because of the varied use of these terms, it is difficult to understand the current status of each unit. The text should clearly state the following: if a unit is active or inactive; when the unit became inactive; if it is RCRA or non-RCRA closed; and when non-RCRA or RCRA closure took place. The text should also identify regulatory agencies that approved RCRA or non-RCRA

closure; identify and report results of sampling activities that took place during RCRA or non-RCRA closure, especially sampling results that verify the clean closure of the unit; and identify remediation activities associated with RCRA or non-RCRA closure.

5. Past facility investigations need to be discussed further. Some references are made to past sampling activities but insufficient detail is provided. For example, in Section 5.0, page 5-32, the discussion of SWMU 9 refers to a study conducted by Golder Associates in 1988, but does not describe the exact focus of this study.
6. The surface water pathway needs to be addressed further in the description of the SWMUs. Several SWMU descriptions mention a release to surface water, but do not include this as a pathway of concern. The report indicates that certain SWMUs such as SWMUs 6 and 11 have had releases, however, the text does not identify surface water as a media of concern for these SWMUs to Little Raccoon Creek and Meyers Ditch. Also, for SWMUs such as SWMU 1 that have identified groundwater as a medium of concern, the text should discuss the possibility for discharge of contaminated groundwater to nearby surface waters.
7. Several SWMU descriptions mention releases to soils both on and adjacent to the unit, however, soil is not identified as a medium of concern. For example, the SWMU 1 description in Section 5.0, page 5-6, describes a release to adjacent soils; however, soil is not included as a medium of concern. The text also states that past analytical data does not show the presence of polychlorinated biphenyls (PCBs), however, no data on halogenated organics exists. Soil should be identified as a medium of concern for SWMUs when a release has occurred or is suspected to have occurred in the past unless it can be clearly demonstrated that past releases have been adequately remediated.
8. Soil and groundwater were identified as media of concern for several SWMUs and AOCs; however, no information was provided to support this. For example, soil and groundwater are considered media of concern for SWMU 52 and AOCs A, B, and C although no mention of releases to either pathway is provided. In addition, the text states that there is a low potential for these media to act as migration pathways. Further information and justification should be provided in the text regarding the identified media of concern.
9. The report contains no technical discussion of the deep geology associated with the waste injection wells. The wells apparently inject waste fluids into the Mount Simon sandstone (Cambrian) at depths of approximately 2,800 feet. There are seven wells total: three are plugged, and four are active. The three plugged wells are listed in the current conditions section (Section 5); however, all discussion in this section is related to surface conditions. As most waste is injected into the wells at the site, the deep geology associated with the wells should be discussed in detail.

SPECIFIC COMMENTS

1. **Section 1.1, Page 1-1, Paragraph 1.** The text defines the term "RFI" as "RCRA Feasibility Investigation". The correct definition is "RCRA Facility Investigation". These references should be corrected.
2. **Section 2.4, Pages 2-5, Paragraph 2.** The text states the facility was issued a Permit-to-Install for the Surface Water Management System. This system is not mentioned anywhere else in the report. Information describing this system such as what is being installed, the system performance and purpose should be included in the report.
3. **Section 3.2, Page 3-1.** The discussion of climate leaves out the precipitation/evapotranspiration ratio, which provides information on the excess moisture in the area. This ratio should be specified in the text.
4. **Section 3.4.1, Page 3-3, Paragraph 1.** The text refers to Figure 3-5 for the bedrock topography and states that a southwest to northeast trending bedrock ridge is located beneath the southern third of the facility and that a generally flat, wide, bedrock area underlies the active facility area. This contradicts Section 4.3.1, which discusses the valley/gully across the facility. Figure 3-5 provides a bedrock topography map for the county and is too general to show facility-specific bedrock topography. The text should be revised to discuss the bedrock topography beneath the facility based on site-specific data and should be included in the discussion of the facility bedrock geology presented in Section 4.3.1.
5. **Section 3.42, Page 3-3, Paragraph 3.** Most till was compacted by the overlying ice at the time of deposition, resulting in high blow counts. The text should be clarified regarding when and where the high blow counts were observed and the material observed.
6. **Section 3, Figure 3-3.** A legend should be added to the figure, and the legend should indicate what the large black arrows signify.
7. **Section 3, Figure 3-7.** The source of this figure should be identified, and data points should be included so that the figure's accuracy can be determined.
8. **Section 4.3.1, Page 4-2, Paragraph 1.** The text discusses voids in bedrock cores. If the voids are interconnected, they could increase the hydraulic conductivity (K) of the bedrock. The text should state if tests were performed to determine the K values of the bedrock cores. In addition, the text discusses horizontal hydraulic conductivity (K_h) and vertical hydraulic conductivity (K_v) values for the various geological materials beneath the facility. The text should state what tests were performed to determine these hydraulic conductivities.

The hydrology of the bedrock is discussed in the hydrology section, while the hydrology of the till is presented in the geology section. Therefore, the text should be consistent in its formatting of information.

9. **Section 4.3.2, Page 4-2, Paragraph 2.** The text should be clarified regarding whether the combined thickness (Figure 4-6) of the tills or the thickness of the upper till is being discussed.
10. **Section 4.3.2, Page 4-2, Paragraph 3.** The text discusses the (K_v) of the upper lacustrine material beneath the facility. According to Section 4.4.3, the upper lacustrine material, in addition to the lower lacustrine material and the till units beneath the facility, are inhibiting the flow of groundwater to bedrock. Therefore, the text should be revised to provide K_v values for the lower lacustrine and till units beneath the facility to document that they are capable of inhibiting the downward flow of groundwater.
11. **Section 4.3.2, Page 4-2, Paragraph 3.** The text discusses the glacial geology and references Figure 4-4 for geological cross sections. On the cross sections, fill material is shown on top of the glacial deposits. The text should discuss the composition of this fill material.
12. **Section 4.3.2, Page 4-3, Paragraph 0.** The text states that the lowermost basal till is not found continuously across the facility. However, cross sections in Figure 4-4 show the lowermost basal till to be continuous across the facility. The text should be revised to resolve this discrepancy because this till unit contains considerable amounts of sand and gravel, and therefore, may have a higher hydraulic conductivity, which would be less inhibitive to groundwater flow.
13. **Section 4.4.2, Page 4-4, Paragraph 4.** The text states that, in the past, a radial flow pattern was identified in the bedrock groundwater flow and that this pattern was produced by pumping the on-site truck wash well. The text should state if this well is presently used because a radial flow pattern is not apparent on the bedrock potentiometric map presented in Figure 4-9.
14. **Section 4.3.2, Page 4-4, Paragraph 7.** The source of the permeabilities (actually hydraulic conditions) given in this paragraph should be specified.
15. **Section 4.4.2, Page 4-5, Paragraph 0.** The text states that the bedrock potentiometric surface beneath the facility is flat with a slight gradient to the northwest. However, the bedrock potentiometric surface depicted in Figure 4-9 shows that the gradient southeast of the facility is steep and then flattens or decreases rapidly beneath the facility. The text should attempt to explain why the gradient of the bedrock potentiometric surface decreases rapidly beneath the facility. The text should also discuss if artesian conditions noted in the bedrock in the regional hydrogeology discussion (Section 3.5) exist for the groundwater in the bedrock beneath the facility. In addition, the artesian conditions present a conflict between regional groundwater flow and groundwater flow beneath the facility. Further information should be provided to verify these conditions.

16. **Section 4.4.2, Page 4-5, Paragraphs 1 and 2.** The text discusses the groundwater flow directions based on data from the shallow (glacial) and bedrock monitoring wells. The text should state if discharge is present from the glacial or bedrock units to surface water and whether seasonal variations of the groundwater flow patterns exist in these units.

In addition, Figure 4-11 depicts the groundwater flow pattern in the lacustrine deposits. The figure shows a groundwater valley or trough east of the on-site ditch. It is not apparent why groundwater is flowing toward this valley and not the on-site ditch, the most likely discharge area for groundwater in the lacustrine deposits. The text should be revised to discuss this valley because groundwater is flowing toward it and not the ditch.

17. **Section 4.4.2, Page 4-5, Paragraph 3.** The hydraulic conductivity values for till and lacustrine sediments given in this paragraph are different from those given in Section 4.3.2. These values are also different from those given in Figures 4-10 and 4-11 by about an order of magnitude. The hydraulic conductivity values should be made consistent throughout the report.
18. **Section 4.4.3, Page 4-5.** The 100-year travel time is suspect given the previous comments. This value seems to come from the calculations in Figures 4-10 and 4-11. The source of the travel time should be specified, and the assumptions given.
19. **Section 4, Figure 4-2.** The legend of this figure is incomplete, and several items in the figure are unclear. This figure should be revised for clarity.
20. **Section 4, Figures 4-3, 4-4, 4-5, 4-6, and 4-7.** The locations of control points are shown only in Figure 4-5. Control points should be provided in all the figures and cross sections so that the accuracy of the figures can be determined.
21. **Section 4, Figures 4-6 and 4-7.** The thin till area coincides with thick lacustrine deposits and appears to be an old drainageway. The text should discuss whether this area has more permeable sediments and whether it provides a pathway for contaminant migration.
22. **Section 4, Figure 4-9.** The report should discuss why the hydraulic gradient changes so drastically at the site boundary, as this condition is not normal. Also, the report should specify the date of measurement of the piezometric surface.
23. **Section 4, Figures 4-10 and 4-11.** First, the date associated with measurement of the piezometric surfaces should be specified. Such dates should be specific: for example, October 15 to 17, 1994. Second, some comparison with previous piezometric surfaces should be provided. Third, seasonal differences in the piezometric surfaces should be shown. Fourth, the arrows indicating groundwater flow direction and the area where the gradient was measured are identical. This error should be corrected.

24. **Section 4, Figures 4-10 and 4-11.** The groundwater flow directions in the till and lacustrine sediments are very different on the west side of the site. The report should discuss this matter, particularly (1) what causes the sharp increase in gradient and piezometric lows in the lacustrine sediments and (2) whether these conditions coincide with a drainage ditch.
25. **Section 5.1, Page 5-1, Paragraph 2.** The text mentions the existence of sludge farms on the facility in Section 5.1 for the first time. These sludge farms should be introduced in Section 2.2, Operational and Regulatory History.
26. **Section 5.1.1, Page 5-2, Paragraph 1.** The text states that soil and water samples were collected in 1983 from a former landfarm area. The specific type of water samples that were collected (that is, surface or groundwater) should be stated.
27. **Section 5.0, Page 5-16, SWMU 5.** The text states Pond 5 was closed in 1985, as required by the consent agreement and final order (CAFO). Further discussion and clarification of the requirements of the CAFO should be included.
28. **Section 5.0, Page 5-17, SWMU 5.** Further description of the locations of Ponds 4 and 7 in relation to Pond 5 is needed to clarify contamination of this SWMU. Also, the medium of concern is listed as groundwater. The soil pathway should also be a medium of concern because a release to soil has occurred.
29. **Section 5.0, Pages 5-18 and 5-26, SWMUs 5 and 7.** A localized condition is briefly mentioned in the sampling data section. A description this condition should be included. Also, results of sampling of wells T-19 and MW-19R should be provided to justify the facility claim that no downward migration of contaminants is occurring.

The groundwater flow velocity is reported to be low, minimizing lateral migration of contaminants. Further information regarding lateral groundwater flow velocity should be provided to verify this condition.
30. **Section 5.0, Pages 5-39, 5-41, and 5-43, SWMUs 12 to 14.** The text states one sample was collected from the landfarm area at SWMU 12. The type of sample taken (that is soil or water), should be included. Also, the text states contaminated soil was removed in 1984. The text should indicate whether samples were collected after soil removal to verify that all contamination was removed. If so, the sample results need to be included.
31. **Section 5.0, Page 5-53, SWMU 18.** The text states that soil remains a potential migration pathway because releases have been documented. In contrast, the text later states the area has been "clean" closed. The term "clean closed" suggests that contaminants have been removed, and therefore, no potential exists for contaminants to migrate in soils because they have been removed. Further justification is needed to show potential contamination of a clean closed unit.

32. **Section 5.0, Page 5-56, SWMU 20.** The Release History discussion briefly mentions removal of an underground storage tank and the adjacent contaminated soil. Additional information regarding removal such as length and condition of piping, and removal procedures should be included. Also, a summary of sampling activities that include; sampling locations and analytical results are needed. In addition, if soil has been removed and soil sample results show no contaminants remain, further information is needed to justify soil as a medium of concern for this SWMU.
33. **Section 5.0, Page 5-118, SWMU 52.** According the text, injection well 3 was plugged due to casing failures. Further information is needed to describe the nature of the casing failure. Also, the text needs to provide a justification of why leaks were anticipated to all pathways but each environmental media is listed as having a low potential to act as a migration pathway.
34. **Section 5.0, Pages 5-127 and 5-129, AOCs D and E.** The migration pathway discussion includes the statement that clay would inhibit the migration of contaminants to groundwater. The migration pathway discussion also states that clay was excavated from the pit, which would decrease the ability of the clay to inhibit contaminant migration. Further explanation of the low potential for contaminant migration should be provided.
35. **Section 5.0, Page 5-135, AOC H.** The text mentions a release that occurred in April 1993, contaminating Little Raccoon Creek. The contaminants that were released should be identified. Also, the text states no data is available from previous sampling events. If this is the case, it is not clear how the release to Little Raccoon Creek was documented. Therefore, further information regarding this release should be provided.
36. **Section 5.0, Page 5-137, AOC I.** The text states the buried lines associated with the Oil Reclamation Facility were removed. The removal should be further described because the condition of the piping could help determine potential releases to migration pathways.
37. **Section 6.8, Page 6-7, Paragraph 5.** The text refers to the Oil Reclamation Facility and Figure 6-3. The figure is labeled "Oil Recovery Facility." One term should be used consistently throughout the RFI to describe this facility.

END OF COMMENTS

PRC Environmental Management, Inc.
233 North Michigan Avenue
Suite 1621
Chicago, IL 60601
312-856-8700
Fax 312-938-0118



January 24, 1995

Mr. Tom Matheson
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Review Comments on the Report on Current Conditions
RCRA Facility Investigation at the Chemical Waste Management Facility
Contract No. 68-W4-0007, Work Assignment No. R05021**

Dear Mr. Matheson:

PRC Environmental Management, Inc. (PRC), has reviewed the subject report prepared by RUST Environment & Infrastructure for the Chemical Waste Management facility in Vickery, Ohio. In general, the report contains inconsistencies and lacks the detail necessary to support the conclusions made regarding potential releases from solid waste management units (SWMUs) and areas of concern (AOCs). PRC's technical review comments are included as enclosure 1 along with comments prepared by PRC's expert hydrogeologist subcontractor, Dr. Keros Cartwright, as enclosure 2. One hard copy and one disk copy of both enclosures are included. If you have any questions, please call me at (312) 856-8786.

Sincerely,

A handwritten signature in dark ink, appearing to read "Mary Wojciechowski". The signature is fluid and cursive.

Mary Wojciechowski
Contractor Project Manager

Enclosures (2)

cc: Bernie Orenstein, EPA (letter only)
Ed Schuessler, PRC (letter only)

ENCLOSURE 1

**TECHNICAL REVIEW COMMENTS ON "REPORT ON CURRENT CONDITIONS
RCRA FACILITY INVESTIGATION"
CHEMICAL WASTE MANAGEMENT FACILITY, VICKERY, OHIO**

(Eight Pages)

**TECHNICAL REVIEW COMMENTS ON "REPORT ON CURRENT CONDITIONS
RCRA FACILITY INVESTIGATION"
CHEMICAL WASTE MANAGEMENT FACILITY, VICKERY, OHIO**

PRC Environmental Management, Inc. (PRC), reviewed the report on current conditions Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) for the Chemical Waste Management facility in Vickery, Ohio. The report, dated December 1994, was prepared by RUST Environment & Infrastructure. Numerous deficiencies were discovered throughout the entire report, including inconsistencies, and incomplete information. Further clarification is needed to support the statements and conclusions made in the report regarding potential releases from solid waste management units (SWMUs) and areas of concern (AOCs). PRC's general and specific review comments are provided below.

GENERAL COMMENTS

1. The text states in Section 1.1, page 1-1, paragraph 2, that the terms "pond", "impoundment", and "surface impoundment" will be used interchangeably throughout the report. One term should be chosen to describe the unit and should be used consistently.
2. Site-specific geological and hydrogeological information is presented in Section 3.0, which presents regional geologic and hydrogeologic information. Instead the site-specific information should be presented in Section 4.0, which includes site-specific information.
3. For each SWMU discussed in the report, the potential for contamination of the groundwater migration pathway is included. Several SWMU descriptions, such as SWMU 1, included a statement that briefly describes a groundwater monitoring system which is in place along with groundwater monitoring wells, and single sample holes adjacent to the unit. In addition, the text describes a closed unit investigation conducted in 1983 that determined no release to groundwater has been detected. For each SWMU as applicable, this statement should describe what composes the groundwater monitoring system in addition to the wells and should define what "single sample holes" means. In addition, the text should list the number

and depths of upgradient and downgradient wells and their locations. If this information serves as a justification for stating that no groundwater release exists and therefore no further action is required for groundwater throughout the corrective action process, then this point needs to be stated more clearly.

4. Throughout the report, the terms "closure", "closed", "clean closed" and "contingent closure" are used. The text states these terms are not to be misinterpreted to mean the same as the regulatory term but the terms merely imply that a unit is out of service or inactive. For example, in Section 5.0, page 5-54, the text states SWMU 19 was closed in 1983. Another example, in Section 5.0, page 5-49, paragraph 1, SWMU 16 is described as being "contingent" closed. Because of the varied use of these terms, it is difficult to understand the current status of each unit. The text should clearly state the following: if a unit is active or inactive; when the unit became inactive; if it is RCRA or non-RCRA closed; and when non-RCRA or RCRA closure took place. The text should also identify regulatory agencies that approved RCRA or non-RCRA closure; identify and report results of sampling activities that took place during RCRA or non-RCRA closure, especially sampling results that verify the clean closure of the unit; and identify remediation activities associated with RCRA or non-RCRA closure.
5. Past facility investigations need to be discussed further. Some references are made to past sampling activities but insufficient detail is provided. For example, in Section 5.0, page 5-32, the discussion of SWMU 9 refers to a study conducted by Golder Associates in 1988, but does not describe the exact focus of this study.
6. The surface water pathway needs to be addressed further in the description of the SWMUs. Several SWMU descriptions mention a release to surface water, but do not include this as a pathway of concern. The report indicates that certain SWMUs such as SWMUs 6 and 11 have had releases, however, the text does not identify surface water as a media of concern for these SWMUs to Little Raccoon Creek and Meyers Ditch. Also, for SWMUs such as SWMU 1 that have identified groundwater as a medium of concern, the text should discuss the possibility for discharge of contaminated groundwater to nearby surface waters.

7. Several SWMU descriptions mention releases to soils both on and adjacent to the unit, however, soil is not identified as a medium of concern. For example, the SWMU 1 description in Section 5.0, page 5-6, describes a release to adjacent soils; however, soil is not included as a medium of concern. The text also states that past analytical data does not show the presence of polychlorinated biphenyls (PCBs), however, no data on halogenated organics exists. Soil should be identified as a medium of concern for SWMUs when a release has occurred or is suspected to have occurred in the past unless it can be clearly demonstrated that past releases have been adequately remediated.
8. Soil and groundwater were identified as media of concern for several SWMUs and AOCs; however, no information was provided to support this. For example, soil and groundwater are considered media of concern for SWMU 52 and AOCs A, B, and C although no mention of releases to either pathway is provided. In addition, the text states that there is a low potential for these media to act as migration pathways. Further information and justification should be provided in the text regarding the identified media of concern.

SPECIFIC COMMENTS

1. **Section 1.1, Page 1-1, Paragraph 1.** The text defines the term "RFI" as "RCRA Feasibility Investigation". The correct definition is "RCRA Facility Investigation". These references should be corrected.
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3. **Section 3.4.1, Page 3-3, Paragraph 1.** The text refers to Figure 3-5 for the bedrock topography and states that a southwest to northeast trending bedrock ridge is located beneath the southern third of the facility and that a generally flat, wide, bedrock area underlies the active facility area. This contradicts Section 4.3.1, which discusses the valley/gully across the facility. Figure 3-5 provides a bedrock topography map for the county and is too general to

show facility-specific bedrock topography. The text should be revised to discuss the bedrock topography beneath the facility based on site-specific data and should be included in the discussion of the facility bedrock geology presented in Section 4.3.1.

4. **Section 4.3.1, Page 4-2, Paragraph 1.** The text discusses voids in bedrock cores. If the voids are interconnected, they could increase the hydraulic conductivity (K) of the bedrock. The text should state if tests were performed to determine the K values of the bedrock cores. In addition, the text discusses horizontal hydraulic conductivity (K_h) and vertical hydraulic conductivity (K_v) values for the various geological materials beneath the facility. The text should state what tests were performed to determine these hydraulic conductivities.

The hydrology of the bedrock is discussed in the hydrology section, while the hydrology of the till is presented in the geology section. Therefore, the text should be consistent in its formatting of information.

5. **Section 4.3.2, Page 4-2, Paragraph 3.** The text discusses the (K_v) of the upper lacustrine material beneath the facility. According to Section 4.4.3, the upper lacustrine material, in addition to the lower lacustrine material and the till units beneath the facility, are inhibiting the flow of groundwater to bedrock. Therefore, the text should be revised to provide K_v values for the lower lacustrine and till units beneath the facility to document that they are capable of inhibiting the downward flow of groundwater.
6. **Section 4.3.2, Page 4-2, Paragraph 3.** The text discusses the glacial geology and references Figure 4-4 for geological cross sections. On the cross sections, fill material is shown on top of the glacial deposits. The text should discuss the composition of this fill material.
7. **Section 4.3.2, Page 4-3, Paragraph 0.** The text states that the lowermost basal till is not found continuously across the facility. However, cross sections in Figure 4-4 show the lowermost basal till to be continuous across the facility. The text should be revised to resolve this discrepancy because this till unit contains considerable amounts of sand and gravel, and therefore, may have a higher hydraulic conductivity, which would be less inhibitive to groundwater flow.

8. **Section 4.4.2, Page 4-4, Paragraph 4.** The text states that, in the past, a radial flow pattern was identified in the bedrock groundwater flow and that this pattern was produced by pumping the on-site truck wash well. The text should state if this well is presently used because a radial flow pattern is not apparent on the bedrock potentiometric map presented in Figure 4-9.
9. **Section 4.4.2, Page 4-5, Paragraph 0.** The text states that the bedrock potentiometric surface beneath the facility is flat with a slight gradient to the northwest. However, the bedrock potentiometric surface depicted in Figure 4-9 shows that the gradient southeast of the facility is steep and then flattens or decreases rapidly beneath the facility. The text should attempt to explain why the gradient of the bedrock potentiometric surface decreases rapidly beneath the facility. The text should also discuss if artesian conditions noted in the bedrock in the regional hydrogeology discussion (Section 3.5) exist for the groundwater in the bedrock beneath the facility. In addition, the artesian conditions present a conflict between regional groundwater flow and groundwater flow beneath the facility. Further information should be provided to verify these conditions.
10. **Section 4.4.2, Page 4-5, Paragraphs 1 and 2.** The text discusses the groundwater flow directions based on data from the shallow (glacial) and bedrock monitoring wells. The text should state if discharge is present from the glacial or bedrock units to surface water and whether seasonal variations of the groundwater flow patterns exist in these units.

In addition, Figure 4-11 depicts the groundwater flow pattern in the lacustrine deposits. The figure shows a groundwater valley or trough east of the on-site ditch. It is not apparent why groundwater is flowing toward this valley and not the on-site ditch, the most likely discharge area for groundwater in the lacustrine deposits. The text should be revised to discuss this valley because groundwater is flowing toward it and not the ditch.
11. **Section 5.1, Page 5-1, Paragraph 2.** The text mentions the existence of sludge farms on the facility in Section 5.1 for the first time. These sludge farms should be introduced in Section 2.2, Operational and Regulatory History.

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13. **Section 5.0, Page 5-16, SWMU 5.** The text states Pond 5 was closed in 1985, as required by the consent agreement and final order (CAFO). Further discussion and clarification of the requirements of the CAFO should be included.
14. **Section 5.0, Page 5-17, SWMU 5.** Further description of the locations of Ponds 4 and 7 in relation to Pond 5 is needed to clarify contamination of this SWMU. Also, the medium of concern is listed as groundwater. The soil pathway should also be a medium of concern because a release to soil has occurred.
15. **Section 5.0, Pages 5-18 and 5-26, SWMUs 5 and 7.** A localized condition is briefly mentioned in the sampling data section. A description this condition should be included. Also, results of sampling of wells T-19 and MW-19R should be provided to justify the facility claim that no downward migration of contaminants is occurring.

The groundwater flow velocity is reported to be low, minimizing lateral migration of contaminants. Further information regarding lateral groundwater flow velocity should be provided to verify this condition.

16. **Section 5.0, Pages 5-39, 5-41, and 5-43, SWMUs 12 to 14.** The text states one sample was collected from the landfarm area at SWMU 12. The type of sample taken (that is soil or water), should be included. Also, the text states contaminated soil was removed in 1984. The text should indicate whether samples were collected after soil removal to verify that all contamination was removed. If so, the sample results need to be included.
17. **Section 5.0, Page 5-53, SWMU 18.** The text states that soil remains a potential migration pathway because releases have been documented. In contrast, the text later states the area has been "clean" closed. The term "clean closed" suggests that contaminants have been removed, and therefore, no potential exists for contaminants to migrate in soils because they have been

removed. Further justification is needed to show potential contamination of a clean closed unit.

18. **Section 5.0, Page 5-56, SWMU 20.** The Release History discussion briefly mentions removal of an underground storage tank and the adjacent contaminated soil. Additional information regarding removal such as length and condition of piping, and removal procedures should be included. Also, a summary of sampling activities that include; sampling locations and analytical results are needed. In addition, if soil has been removed and soil sample results show no contaminants remain, a further information is needed to justify soil as a medium of concern for this SWMU.
19. **Section 5.0, Page 5-118, SWMU 52.** According to the text, injection well 3 was plugged due to casing failures. Further information is needed to describe the nature of the casing failure. Also, the text needs to provide a justification of why leaks were anticipated to all pathways but each environmental media is listed as having a low potential to act as a migration pathway.
20. **Section 5.0, Pages 5-127 and 5-129, AOCs D and E.** The migration pathway discussion includes the statement that clay would inhibit the migration of contaminants to groundwater. The migration pathway discussion also states that clay was excavated from the pit, which would decrease the ability of the clay to inhibit contaminant migration. Further explanation of the low potential for contaminant migration should be provided.
21. **Section 5.0, Page 5-135, AOC H.** The text mentions a release that occurred in April 1993, contaminating Little Raccoon Creek. The contaminants that were released should be identified. Also, the text states no data is available from previous sampling events. If this is the case, it is not clear how the release to Little Raccoon Creek was documented. Therefore, further information regarding this release should be provided.
22. **Section 5.0, Page 5-137, AOC I.** The text states the buried lines associated with the Oil Reclamation Facility were removed. The removal should be further described because the condition of the piping could help determine potential releases to migration pathways.

23. **Section 6.8, Page 6-7, Paragraph 5.** The text refers to the Oil Reclamation Facility and Figure 6-3. The figure is labeled "Oil Recovery Facility." One term should be used consistently throughout the RFI to describe this facility.

ENCLOSURE 2

**TECHNICAL REVIEW COMMENTS ON "REPORT ON CURRENT CONDITIONS
RCRA FACILITY INVESTIGATION"
CHEMICAL WASTE MANAGEMENT FACILITY, VICKERY, OHIO**

(Three Pages)

Keros Cartwright
Hydrogeologist
615 East Peabody Drive
P.O. Box 544
Champaign, Illinois 61820

Comments on the December 1994 Report on Current Conditions;
RCRA Facility Investigation; Chemical Waste Management, Vickery, Ohio

General Comment

The report contains no technical discussion of the deep geology associated with the waste injection wells. The wells apparently inject waste fluids into the Mount Simon sandstone (Cambrian) at depths of approximately 2,800 feet. There are seven wells total: three are plugged, and four are active. The three plugged wells are listed in the current conditions section (Section 5); however, all discussion in this section is related to surface conditions. As most waste is injected into the wells at the site, the deep geology associated with the wells should be discussed in detail.

Specific Comments

1. Section 3.2, Page 3-1 The discussion of climate leaves out the precipitation/evapotranspiration ratio, which provides information on the excess moisture in the area. This ratio should be specified in the text.
2. Section 3.42, Page 3-3, Paragraph 3 Most till was compacted by the overlying ice at the time of deposition, resulting in high blow counts. The text should be clarified regarding when and where the high blow counts were observed and the material observed.
3. Section 3, Figure 3-3 A legend should be added to the figure, and the legend should indicate what the large black arrows signify.
4. Section 3, Figure 3-7 The source of this figure should be identified, and data points should be included so that the figure's accuracy can be determined.

5. Section 4.3.2, Page 4-2, Paragraph 2 The text should be clarified regarding whether the combined thickness (Figure 4-6) of the tills or the thickness of the upper till is being discussed.
6. Section 4.3.2, Page 4-4, Paragraph 7 The source of the permeabilities (actually hydraulic conditions) given in this paragraph should be specified.
7. Section 4.4.2, Page 4-5, Paragraph 3 The hydraulic conductivity values for till and lacustrine sediments given in this paragraph are different from those given in Section 4.3.2. These values are also different from those given in Figures 4-10 and 4-11 by about an order of magnitude. The hydraulic conductivity values should be made consistent throughout the report.
8. Section 4.4.3, Page 4-5 The 100-year travel time is suspect given the previous comments. This value seems to come from the calculations in Figures 4-10 and 4-11. The source of the travel time should be specified, and the assumptions given.
9. Section 4, Figure 4-2 The legend of this figure is incomplete, and several items in the figure are unclear. This figure should be revised for clarity.
10. Section 4, Figures 4-3, 4-4, 4-5, 4-6, and 4-7 The locations of control points are shown only in Figure 4-5. Control points should be provided in all the figures and cross sections so that the accuracy of the figures can be determined.
11. Section 4, Figures 4-6 and 4-7 The thin till area coincides with thick lacustrine deposits and appears to be an old drainageway. The text should discuss whether this area has more permeable sediments and whether it provides a pathway for contaminant migration.
12. Section 4, Figure 4-9 The report should discuss why the hydraulic gradient changes so drastically at the site boundary, as this condition is not normal. Also, the report should specify the date of measurement of the piezometric surface.

13. Section 4, Figures 4-10 and 4-11 First, the date associated with measurement of the piezometric surfaces should be specified. Such dates should be specific: for example, October 15 to 17, 1994. Second, some comparison with previous piezometric surfaces should be provided. Third, seasonal differences in the piezometric surfaces should be shown. Fourth, the arrows indicating groundwater flow direction and the area where the gradient was measured are identical. This error should be corrected.
14. Section 4, Figures 4-10 and 4-11 The groundwater flow directions in the till and lacustrine sediments are very different on the west side of the site. The report should discuss this matter, particularly (1) what causes the sharp increase in gradient and piezometric lows in the lacustrine sediments and (2) whether these conditions coincide with a drainage ditch.

DEC 29 1994

HRP-8J

Mary C. Wojciechowski
Contractor Project Manager
PRC Environmental Management, Inc.
233 North Michigan Avenue
Suite 1621
Chicago, IL 60601

**RE: Chemical Waste Management - Vickery
Facility (CWM) OHD 020 273 819
Work Assignment Number R05026**

Dear Ms. Wojciechowski:

I am requesting a review and written comments on the CWM Current Conditions Report, dated December 22, 1994.

This request is made in accordance with REPA Work Assignment No. R05026. The workplan for this work assignment, describes this request in Task 6. Additionally, Task 9 describes the use of an expert hydrogeologist to review the hydrogeologic portions of the report.

According to the REPA workplan, the comments are due 25 days from the date of this letter. Please provide a copy of your comments on diskette in Wordperfect 5.1 format. If there will be any problems in complying with this due date, please contact me as soon as possible.

If you have any questions, please contact me at (312) 886-7569.

Sincerely,

Thomas Matheson
Work Assignment Manager

Enclosure

cc: B. Orenstein, U.S. EPA



Chemical Waste Management, Inc.

3956 State Route 412
Vickery, Ohio 43464
419/547-7791

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

P 228 284 981
December 22, 1994

United States Environmental Protection Agency
Region 5
Attention Mr. Thomas Matheson HRP - 8J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: Current Conditions Report of the Vickery Facility - Final Federal Permit,
Chemical Waste Management, Inc. - EPA ID. No. OHD 020 273 819

Dear Sir:

In accordance with paragraph III. F. 2 of the Hazardous Waste Management Permit, EPA Identification Number OHD 020 273 819 dated October 24, 1994, enclosed are three (3) copies of the report on the current conditions of the Vickery Facility.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Should you have any questions regarding this matter, please contact Michael Curry or Steve Lonneman at (419) 547 - 7791.

Sincerely,
CHEMICAL WASTE MANAGEMENT, INC.

A handwritten signature in cursive script, appearing to read 'F.G. Nicar'.

F.G. Nicar
General Manager

Mr. Thomas Matheson
USEPA
December 22, 1994
Page 2

Attachments

cc w/attachments:	Michael Curry Agency Correspondence File
cc w/o attachments:	Steve Lonneman Sandy Clark Bob Heitman, Rust E&I (Bensalem) Richard Zweig, Rust E&I (Bensalem)